LEG. FINANCE - BILLS 1979 - 1980 1148

HB 669 670, 648

1148

RECORDS CERTIFICATION

I, the undersigned, an employee of the State of Alaska, do hereby certify that the microfilm images on this microform are accurate reproductions of the original records of the State of Alaska as accumulated during the regular course of business, and that it is the established policy and practice of this State to microfilm its records and to dispose of the original records after microfilm reproductions have been made.

James O Smith
Signature of Camera Operator

3/20/90
Date

HB 669

February 4, 1980

The Honorable Terry Gardiner
Speaker of the House
Alaska State Legislature
Pouch V
Juneau, Alaska 99811

Dear Mr. Speaker:

Under the authority of art. III, sec. 18, of the Alaska Constitution, I am transmitting a bill making a supplemental appropriation to the Office of the Governor, Public Defender Agency. This request is being submitted to provide sufficient funding in travel and contractual services to allow the public defender to adequately represent clients for whom he is appointed by the judiciary. I urge your prompt enactment of this measure.

Sincerely,

S/JS H

Jay S. Hammond
Governor

of ALASKA

MEMORANDUM

TO: Ron Lehr, Director
Division of Budget & Management
Office of the Governor

DATE: January 4, 1980

FILE NO:

HOUSE BILL NO. 669

TELEPHONE NO:

FROM: Dan Dawson, Budget Analyst
Division of Budget & Management
Office of the Governor

SUBJECT: Office of the Governor $82,300 Supplemental for the Public Defender BRU; Log # 01-01

I have reviewed the Office of the Governor's request for an $82,300 GF Supplemental for the Public Defender and recommend approval. This recommendation is based on the following reasons:

The Governor's FY 80 budget for the Public Defender was quite conservative. It allowed just enough increase from FY 79 to maintain the status quo, which meant that Public Defender attorney's caseload rations would continue frustratingly high. Yet the Legislature gave the Public Defender a budget $327,900 or 12.2% lower than the Governor's budget.

In order for the Public Defender to adequately represent clients it needs to have the manpower and support funds to keep pace with the caseload thrust upon it.

Funding Information:
General Fund: $82,300
Other Funds: -0-
$82,300

Introduced: 2/4/80
Referred: Judiciary and Finance

BY THE RULES COMMITTEE BY REQUEST OF THE GOVERNOR

IN THE HOUSE

HOUSE BILL NO. 669

IN THE LEGISLATURE OF THE STATE OF ALASKA

ELEVENTH LEGISLATURE - SECOND SESSION

A BILL

For an Act entitled: "An Act making a supplemental appropriation to the Office of the Governor, Public Defender Agency, for representation of certain clients; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* Section 1. The sum of $82,300 is appropriated from the general fund to the Office of the Governor, Public Defender Agency, to provide funds for travel and contractual services to represent clients for whom the agency is appointed by the judiciary.

* Sec. 2. This Act takes effect immediately in accordance with AS 0 .- 10.070(c).

Original

THE LEGISLATURE OF THE STATE OF ALASKA
ELEVENTH LEGISLATURE

FISCAL NOTE

I. REQUEST
Bill/Resolution No. HB 669
Title An Act making a supplemental appropriation to the Public Defender Agenc
Requested by Office of Governor Date 2/4/80

II. FISCAL DETAIL
Agency Affected Office of Governor
Program Category Affected Administration of Justice
Budget Request Unit(s) Affected Public Defender Agency

EXPENDITURES (Thousands of Dollars)

	Supplemental FY 79	FY 80	FY 81	FY 82	FY 83	FY 84
100 PERSONAL SERVICES						
200 TRAVEL	120.3	43.5				
300 CONTRACTUAL	394.5	38.8				
400 COMMODITIES						
500 EQUIPMENT						
600 LAND & STRUCTURES						
700 GRANTS, CLAIMS, ETC.						
TOTAL	514.8	82.3				

FUNDING (Thousands of Dollars)

GENERAL FUND		82.3				
FEDERAL FUNDS						
OTHER (Specify)						

POSITIONS

FULL TIME						
PART TIME						
TEMPORARY						

III. ANALYSIS (See Fiscal Note Preparation Instructions, Section III)
Agency travel for FY80 was cut 32% from FY79 actual expenditures while contractual services were cut 7%. This bill will bring these two categories back to the FY79 level and will compensate for increased costs of bush air travel, the cost of professional experts and increased long distance telephone rates. Without this supplemental the Agency attorneys will be unable to travel the last quarter of FY80 to follow the Court calendar.

IV. DATE Feb. 8, 1980 PREPARED BY Bob Stokes, Admin. Officer
AGENCY Public Defender Agency
PHONE 279-7541

Original: Legislative Finance
cc: Budget and Management
Prime Sponsor (First Legislator Named) ✓

33-001 (Rev. 10/78)

HB 669

An Act making a supplemental appropriation to the Office of the Governor, Public Defender Agency, for representation of certain clients; effective date.

Inc. in CSHB 66—
Sec. 82

IN: 2/13/80

(11)

COMMITTEE REPORT

HOUSE

2/13/80

FURTHER:

Date: _____

Mr. Speaker:

The Committee on FINANCE has had HB 669

"An Act making a supplemental appropriation to the Office of the Governor, Public Defender Agency, for representation of certain clients; and providing for an effective date."

under consideration and (a majority of the committee) (the committee) reports it back with the following recommendations:

[ ] do pass [ ] do not pass

[ ] do pass with attached amendments(s)

[ ] replace with CS for _____ [ ] same title [ ] new title

and recommends _____

[ ] AND attaches a "Letter of Intent" [ ] New Fiscal Note

[ ] reports it back without recommendation

[ ] referred to the _____ Committee

MEMBERS SIGNING
DO PASS

MEMBERS HAVING
OTHER RECOMMENDATIONS:

_____

_____

CHAIRMAN

H 60 (Rev. 12/78)

(9)

COMMITTEE REPORT

HOUSE

2/13

2/4/80

FURTHER: FINANCE

Date: _____

Mr. Speaker:

The Committee on JUDICIARY has had HB 669

"An Act making a supplemental appropriation to the Office of the Governor, Public Defender Agency, for representation of certain clients; and providing for an effective date."

under consideration and (a majority of the committee) (the committee) reports it back with the following recommendations:

[ ] do pass [ ] do not pass

[ ] do pass with attached amendments(s)

[ ] replace with CS for _____ [ ] same title [ ] new title

and recommends _____

[ ] AND attaches a "Letter of Intent" [X] ~~New~~ Fiscal Note

[X] reports it back without recommendation

[ ] referred to the _____ Committee

MEMBERS SIGNING DO PASS

Charles Hall

Ted B. Anderson

T Buchwald

MEMBERS HAVING OTHER RECOMMENDATIONS:

Terry Martin - No Rec.

R O R & Roll — No Rec.

Charles Hall
CHAIRMAN

H 60 (Rev. 12/78)

letter
fiscal memo (+ fiscal note 2/13)

Funding Information:
General Fund: $82,300
Other Funds: -0-
$82,300

Introduced: 2/4/80
Referred: Judiciary and Finance

IN THE HOUSE

BY THE RULES COMMITTEE BY REQUEST OF THE GOVERNOR

HOUSE BILL NO. 669

IN THE LEGISLATURE OF THE STATE OF ALASKA

ELEVENTH LEGISLATURE - SECOND SESSION

A BILL

For an Act entitled: "An Act making a supplemental appropriation to the Office of the Governor, Public Defender Agency, for representation of certain clients; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* Section 1. The sum of $82,300 is appropriated from the general fund to the Office of the Governor, Public Defender Agency, to provide funds for travel and contractual services to represent clients for whom the agency is appointed by the judiciary.

* Sec. 2. This Act takes effect immediately in accordance with AS 01.-10.070(c).

COMMITTEE COPY

HB669

February 4, 1980

The Honorable Terry Gardiner
Speaker of the House
Alaska State Legislature
Pouch V
Juneau, Alaska 99811

Dear Mr. Speaker:

Under the authority of art. III, sec. 18, of the Alaska Constitution, I am transmitting a bill making a supplemental appropriation to the Office of the Governor, Public Defender Agency. This request is being submitted to provide sufficient funding in travel and contractual services to allow the public defender to adequately represent clients for whom he is appointed by the judiciary. I urge your prompt enactment of this measure.

Sincerely,

S/JS H

Jay S. Hammond
Governor

STATE
of ALASKA

MEMORANDUM

TO: Ron Lehr, Director
Division of Budget & Management
Office of the Governor

DATE: January 4, 1980

FILE NO:

HOUSE BILL NO. 669

TELEPHONE NO:

FROM: Dan Dawson, Budget Analyst
Division of Budget & Management
Office of the Governor

SUBJECT: Office of the Governor $82,300 Supplemental for the Public Defender BRU; Log # 01-01

I have reviewed the Office of the Governor's request for an $82,300 GF Supplemental for the Public Defender and recommend approval. This recommendation is based on the following reasons:

The Governor's FY 80 budget for the Public Defender was quite conservative. It allowed just enough increase from FY 79 to maintain the status quo, which meant that Public Defender attorney's caseload rations would continue frustratingly high. Yet the Legislature gave the Public Defender a budget $327,900 or 12.2% lower than the Governor's budget.

In order for the Public Defender to adequately represent clients it needs to have the manpower and support funds to keep pace with the caseload thrust upon it.

ALASKA STATE LEGISLATURE

ELEVENTH Legislature SECOND ... Session

HOUSE ... BILL ..... NO. ... 669

By THE RULES COMMITTEE BY ..... REQUEST OF THE GOVERNOR

"An Act making a supplemental appropriation to the Office of the Governor, Public Defender Agency, for representation of certain clients; and providing for an effective date."

Supp appro, Public Defender Agency

Introduced in the House 2/4/ ....., 19 80

HISTORY IN THE HOUSE

19		
	80	Read first time and referred to Committee on
Feb.	4	Judiciary and Finance
		Reported back with recommendation that
		Read second time and
		Read third time and

PASS	Effective Date
Yeas	Yeas
Nays	Nays
Absent	Absent
Excused	Excused

Reconsideration

PASS	Effective Date
Yeas	Yeas
Nays	Nays
Absent	Absent
Excused	Excused

Reported correctly engrossed
Signed by Speaker
Sent to Senate

CHIEF CLERK OF THE HOUSE

HISTORY IN THE SENATE

19	
	Read first time and referred to Committee on
	Reported back with recommendation that
	Read second time and
	Read third time and

PASS	Effective Date
Yeas	Yeas
Nays	Nays
Absent	Absent
Excused	Excused

Reconsideration

PASS	Effective Date
Yeas	Yeas
Nays	Nays
Absent	Absent
Excused	Excused

Reported correctly engrossed
Signed by President
Returned to House

SECRETARY OF THE SENATE

HISTORY IN THE HOUSE

19	
	Received from Senate
	Concurred in Senate amendment thus adopting: VOTE
	Failed to concur in Senate amendment; asked Senate to recede VOTE
	Senate receded from amendment VOTE
	Senate failed to recede from amendment VOTE
	CC appointed by House
	CC appointed by Senate
	CC adopted by House VOTE
	CC adopted by Senate VOTE
	To enrolling Reported correctly enrolled Sent to Governor
	..... by Governor
	Filed with Lt. Governor
	Chapter No. .....

31-002

RECORDS CERTIFICATION

I, the undersigned, an employee of the State of Alaska, do hereby certify that the microfilm images on this microform are accurate reproductions of the original records of the State of Alaska as accumulated during the regular course of business, and that it is the established policy and practice of this State to microfilm its records and to dispose of the original records after microfilm reproductions have been made.

James O Smith
Signature of Camera Operator

3/20/90
Date

(11)

COMMITTEE REPORT

HOUSE

2/22/80

FURTHER:

Date: March 6, 1980

Mr. Speaker:

The Committee on FINANCE has had HB 670

"An Act making a supplemental appropriation to the Department of Labor, Division of Workers' Compensation; and providing for an effective date."

under consideration and (a majority of the committee) (the committee) reports it back with the following recommendations:

[ ] do pass [ ] do not pass

[ ] do pass with attached amendments(s)

[X] replace with CS for HB 670 (Finance) [ ] same title [X] new title

and recommends that it do pass

[ ] AND attaches a "Letter of Intent" [ ] New Fiscal Note

[ ] reports it back without recommendation

[ ] referred to the _____ Committee

MEMBERS SIGNING
DO PASS

Marion
Duncan
Smith
Rogers
Dawson
Joel Montoya

MEMBERS HAVING
OTHER RECOMMENDATIONS:

Marion
CHAIRMAN

H 60 (Rev. 12/78)

Original sponsor: Rules/Governor

Funding Information	
General Fund	$270,800
Other Funds	- 0 -
	$270,800

IN THE HOUSE BY THE FINANCE COMMITTEE

CS FOR HOUSE BILL NO. 670 (Finance)

IN THE LEGISLATURE OF THE STATE OF ALASKA

ELEVENTH LEGISLATURE - SECOND SESSION

A BILL

For an Act entitled: "An Act making appropriations to the Department of Labor, workmen's compensation division; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* Section 1. The sum of $54,600 is appropriated from the general fund to the Department of Labor, workmen's compensation division, to finance new positions from April 1, 1980, through June 30, 1980.

* Sec. 2. The sum of $211,200 is appropriated from the general fund to the Department of Labor, workmen's compensation division, to establish a workmen's compensation information handling system.

* Sec. 3. The sum of $5,000 is appropriated from the general fund to the Department of Labor, workmen's compensation division, to draft a workmen's compensation handbook for injured workers.

* Sec. 4. The unexpended and unobligated portion of the appropriation made by sec. 2 of this Act lapses into the general fund July 30, 1982.

* Sec. 5. The unexpended and unobligated portions of the appropriations made in secs. 1 and 3 of this Act lapse into the general fund June 30, 1980.

* Sec. 6. This Act takes effect immediately in accordance with AS 01.10.-070(c).

LETTER OF INTENT
HOUSE LABOR AND MANAGEMENT COMMITTEE
CS HB 670 (L&M)

It is the intent of the House Labor and Management Committee that the House Finance Committee, in its deliberations on CSHB 670, consider the possibility of additional funding for the purpose of publication of a Workers' Compensation booklet. The booklet should contain information for dissemenation to claimants to advise them of procedures and their rights and responsibilities under Alaska's Workers' Compensation law. The House Labor and Management Committee has requested that the Alaska Department of Labor, Division of Workers' Compensation, prepare an estimate of the cost of such a booklet.

Representative Vern Hurlbert
Chairman
House Labor and Management Committee

Representative Brian Rogers
Chairman
Subcommittee on Workers' Compensation
House Labor and Management Committee

Original sponsor: Rules/Governor

Offered: 2/22/80
Referred: Finance

Funding Information

General Fund	$265,800
Other Funds	- 0 -
	$265,800

IN THE HOUSE

BY THE LABOR AND MANAGEMENT COMMITTEE

CS FOR HOUSE BILL NO. 670

IN THE LEGISLATURE OF THE STATE OF ALASKA

ELEVENTH LEGISLATURE - SECOND SESSION

A BILL

For an Act entitled: "An Act making appropriations to the Department of Labor, workmen's compensation division; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* Section 1. The sum of $54,600 is appropriated from the general fund to the Department of Labor, workmen's compensation division, to finance new positions from April 1, 1980, through June 30, 1980.

* Sec. 2. The sum of $211,200 is appropriated from the general fund to the Department of Labor, workmen's compensation division, to establish a workmen's compensation information handling system.

* Sec. 3. The unexpended and unobligated portion of the appropriation made by sec. 2 of this Act lapses into the general fund July 30, 1982.

* Sec. 4. This Act takes effect immediately in accordance with AS 01.10.-070(c).

HB670

February 4, 1980

The Honorable Terry Gardiner
Speaker of the House
Alaska State Legislature
Pouch V
Juneau, Alaska 99811

Dear Mr. Speaker:

Under the authority of art. III, sec. 18, of the Alaska Constitution, I am transmitting a bill making a supplemental appropriation to the Department of Labor, Division of Workers' Compensation, to fund new positions from April 1980 through June 1980.

These funds are urgently needed to process a backlog of cases currently awaiting the board's decision. A class action suit is now pending against the board, charging failure of the board to administer claims within statutory time limits.

The positions funded by this request are included in the department's FY 81 operating budget to enable the division to keep current with future claims.

Sincerely,

S/JSH

Jay S. Hammond
Governor

STATE OF ALASKA

MEMORANDUM

JAN 16 REC'D

TO: Ron Lehr, Director
Division of Budget & Management
Office of the Governor

DATE: January 15, 1980

FILE NO: Lgr 07-2

TELEPHONE NO:

FROM: Edmund N. Orbeck, Commissioner
Department of Labor

SUBJECT: HOUSE BILL NO. 670
FY 80 Budget Supplemental for Administration of Workmen's Compensation

The Alaska Workmen's Compensation Board has been subjected to considerable public criticism through picket lines and newspaper articles due to its inability to render timely hearings and decisions on disputed claims. Additionally, a class action suit is pending in Superior Court for Board failure to administer claims within statutory time limits.

The non-existence of an effective and efficient management system to facilitate prompt processing of compensable claims and informal resolution of controversy at the initial level and the lack of hearing officer resources to chair hearings and issue pending decisions has resulted in the injured worker waiting over six months for adjudication of a disputed claim. These administrative delays compound the injured worker's losses, prolong disablement and prevent return to gainful employment. Further, delays greatly increase compensation costs to the employer in litigation fees and assessment of late payment penalties.

A supplemental appropriation is necessary to eliminate a present backlog of 120 cases that are pending issuance of a Board decision and to reduce a considerable backlog of cases on which parties have requested a hearing but have yet to be scheduled before the Board. Further, this appropriation will provide the means to initiate a management plan calling for the complete reorganization of the division with the primary thrust of minimizing litigation and maximizing the streamlined administrative handling of injuries and claims. Unless such a system is established, an inadequate level of service to both the injured worker and to the employer will continue, which can only result in time consuming and costly litigation for the parties concerned.

Consistent with the positions requested in the FY 81 budget, the personal services allocation will fund the following positions for three months each:

Workers Compensation Officer II	Anchorage
Workers Compensation Officer II	Fairbanks
Workers Compensation Officer I	Juneau
Administrative Officer II	Juneau
Clerk Typist III	Anchorage

The three workers' compensation officers will provide effective advisory service to employees, employers, insurance companies, medical facilities and legal representatives as to procedures and all parties rights and obligations under the Act, aimed towards reducing the incidence of disputed claims requiring Board hearing. By establishing the three lower level workers' compensation officers, three current positions experienced in chairing Board hearings will be able to devote full time to address the continuing need of timely Board adjudication.

The Administrative Officer position is an integral part of the management and reorganization plan to implement and operate the systems required to support the mediation and adjudication functions of the division and Board.

Funding of the Clerk Typist position is needed for transcription and legal typing service to the hearing officer in issuance of the Board decisions as well as general typing service to the Workmen's Compensation Officer.

Funding in the non-personal services categories provides for additional travel, commodities and contractural costs including monies for hearing officers to address the backlog of pending Board cases.

The request for a Supplemental Appropriation of $54.6 to the FY 80 budget is critical if this BRU is to carry out the legislative intent of the Alaska Workmen's Compensation Act and to achieve the department's goal to improve the program to an efficient and effective function of the State.

Attachments

748670

	POSITION TITLE			RANGE/STEP	BARG. UNIT.	LOCATION			
1	Workers Compensation Officer II			16A	GG	Anchorage	GOV	APPROV	DIS
2	TYPE OF POSITION: PFT	STAFF MONTHS: 3	RP No.	PCN No.	PRIORITY	FORM 12 PAGE/LINE	LGG		

	TYPE OF EXPENDITURE		AMOUNT
	1	2	3
4	PERSONAL SERVICES: SALARY $1,888 x 3	$ 5,664	
5	BENEFITS 17.70%	1,002	
6	FICA	347	
7	HEALTH INS. 106 x 3	318	
8	TOTAL PERSONAL SERVICES 01		$ 7,331
9	TRAVEL 02		200
10	CONTRACTUAL 03		2,200
11	COMMODITIES 04		100
12	EQUIPMENT 05		-0-
13	OTHER		
14	TOTAL COST		$ 9,831

	CODE	FUNDING SOURCE	
15		FED RCPTS. 1002	
16		GF MATCH. 1003	
17		GEN. FUND 1004	$9,831
18		I-A RCPTS. 1007	
19		PGM RCPTS 1023	
20		OTHER	
21	CONTINUATION		
22	ADDITION		

FOR B&M USE ONLY

AA KEY NUMBER _____ COLUMN NO. _____

JUSTIFICATION:

Worker's Compensation Officer will provide effective advi service to employees, employers, insurance companies, med facilities and legal representatives as to procedures and party's rights and obligations under the Act, aimed toward facilitating timely processing of claims and avoidance o litigation.

The Alaska Workmen's Compensation Act intended that payme benefits to injured workers be paid promptly and the proce and procedure be as summary and simple as possible. Curre the disabled worker must wait up to six months for Board adjudication of a disputed claim.

A Workmen's Compensation Officer available to devote more time at the offset of controversy or misunderstanding wil allow a large percentage of disputed claims to be settled through voluntary and informal resolution, reducing the incidence of disputed claims requiring Board hearing. By establishing the Worker's ompensation Officer, two curren posttions will be able to devote full time to hearings to address the continuing need of timely Board adjudication.

AGENCY Department of Labor PROGRAM AREA Worker Protection

BRU Workmen's Compensation

COMPONENT _____

13 REQUEST FOR NEW POSITION.

FY 81

REVISED DATE _____

02-1013 (Rev. 7/79)

1	POSITION TITLE: Worker's Compensation Officer II			RANGE/STEP: 16A	BARG. UNIT: GG	LOCATION: Fairbanks	GOV.	APPROV.
2	TYPE OF POSITION: PFT	STAFF MONTHS: 3	RP No.	PCN No.	PRIORITY	FORM 12 PAGE/LINE	LUG	

	TYPE OF EXPENDITURE	1	2	AMOUNT 3
4	PERSONAL SERVICES SALARY $2,108 x 3		$ 6,324	
5	BENEFITS 17.7%		1,119	
6	FICA		388	
7	HEALTH INS. 106 x 3		318	
8	TOTAL PERSONAL SERVICES	01		$ 8,149
9	TRAVEL	02		1,800
10	CONTRACTUAL	03		2,200
11	COMMODITIES	04		100
12	EQUIPMENT	05		-0-
13	OTHER			
14	TOTAL COST			$12,249

	CODE	FUNDING SOURCE	
15		FED RCPTS. 1002	
16		GF MATCH. 1003	
17		GEN. FUND 1004	$12,249
18		I-A RCPTS. 1005	
19		PGM RCPTS 1028	
20		OTHER	
21	CONTINUATION		
22	ADDITION		

FOR OMB USE ONLY

AA KEY NUMBER _____ COMP. NO. _____

JUSTIFICATION:

Worker's Compensation Officer will provide effective adviso service to employees, employers, insurance companies, medic facilities and legal representatives as to procedures and a party's rights and obligations under the Act, aimed towards facilitating timely processing of claims and avoidance of litigation.

The Alaska Workmen's Compensation Act intended that payment of benefits to injured workers be paid promptly and that pr cess and procedure be as summary and simple as possible. Currently the disabled worker must wait up to six months fo Board adjudication of a disputed claim.

A Workmen's Compensation Officer available to devote more time at the offset of controversy or misunderstanding will allow a large percentage of disputed claims to be settled through voluntary and informal resolution, reducing the incidence of disputed claims requiring Board hearing. By establishing the Worker's Compensation Officer, one current position will be able to devote full time to hearings to address the continuing need of timely Board adjudication.

AGENCY Department of Labor PROGRAM AREA Worker Protection

BRU Workmen's Compensation

COMPONENT

13 REQUEST FOR NEW POSITION.

REVISED DATE

FY 81

02-1013 (Rev. 7/79)

1	POSITION TITLE: Clerk Typist III			RANGE/STEP: 8A	BARG. UNIT: FF	LOCATION: Anchorage	GOV.	APPROV. / DISA
2	TYPE OF POSITION: PFT	STAFF MONTHS: 3	RP No.	PCN No.	PRIORITY	FORM 12 PAGE/LINE	LEG	

	TYPE OF EXPENDITURE	1	2	AMOUNT 3
4	PERSONAL SERVICES: SALARY	$1,108 x 3	$3,324	
5	BENEFITS	17.70%	588	
6	FICA		249	
7	HEALTH INS.	106 x 3	318	
8	TOTAL PERSONAL SERVICES	01		$4,479
9	TRAVEL	02		-0-
10	CONTRACTUAL	03		2,200
11	COMMODITIES	04		100
12	EQUIPMENT	05		800
13	OTHER			
14	TOTAL COST			$7,579

	CODE	FUNDING SOURCE	
15		FED RCPTS. 1002	
16		GF MATCH. 1003	
17		GEN. FUND 1004	$7,579
18		I-A RCPTS. 1007	
19		PGM RCPTS 1037	
20		OTHER	
21	CONTINUATION		
22	ADDITION		

FOR B&M USE ONLY

AA KEY NUMBER _____ COLUMN NO. _____

JUSTIFICATION:

The Clerk Typist position will provide clerical assistance for transcription and legal typing services to the Workmen's Compensation Board as well as general typing services to the Workmen's Compensation officer.

Funding of this position is needed to assist in timely docketing of cases adjudicated by the Board and the issuance of the Board decisions.

AGENCY Department of Labor

PROGRAM AREA Worker Protection

BRU Workmen's Compensation

COMPONENT

13 REQUEST FOR NEW POSITION.

FY 81

REVISED DATE

02-1013 (Rev. 7/79)

1	POSITION TITLE: Workers Compensation Officer I			RANGE/STEP: 13A	BARG. UNIT: GG	LOCATION: Juneau	GOV. / APPROV / DISAP
2	TYPE OF POSITION: PFT	STAFF MONTHS: 3	RP No.	PCN No.	PRIORITY	FORM 12 PAGE/LINE	LEGI

	TYPE OF EXPENDITURE	1	2	AMOUNT 3
4	PERSONAL SERVICES: SALARY $1,519 x 3		$ 4,557	
5	BENEFITS 17.70%		807	
6	FICA		279	
7	HEALTH INS. 106 x 3		318	
8	TOTAL PERSONAL SERVICES	01		$ 5,961
9	TRAVEL	02		1,800
10	CONTRACTUAL	03		2,200
11	COMMODITIES	04		100
12	EQUIPMENT	05		
13	OTHER			
14	TOTAL COST			$10,061

	CODE	FUNDING SOURCE	
15		FED RCPTS. 1002	
16		GF MATCH. 1003	
17		GEN. FUND 1004	$10,061
18		I-A RCPTS. 1005	
19		PGM RCPTS 1028	
20		OTHER	
21	CONTINUATION		
22	ADDITION		

FOR B&M USE ONLY

AA KEY NUMBER _____ COLUMN NO. _____

JUSTIFICATION:

Worker's Compensation Officer will provide effective advisor service to employees, employers, insurance companies, medica facilities and legal representatives as to procedures and al party's rights and obligations under the Act, aimed towards facilitating timely processing of claims and avoidance of litigation.

The Alaska Workmen's Compensation Act intended that payment of benefits to injured workers be paid promptly and that pro cess and procedure be as summary and simple as possible. Currently the disabled worker must wait up to six months for Board adjudication of a disputed claim.

Establishing the Worker's Compensation Officer position will free the Director and Deputy Director's time to properly administer their respective offices and to ensure that the Board is provided the management support to carry out the provisions of the Alaska Workmen's Compensation Act.

AGENCY Department of Labor PROGRAM AREA Worker Protection

BRU Workmen's Compensation

COMPONENT

FY 81

13 REQUEST FOR NEW POSITION.

REVISED DATE

02-1013 (Rev. 7/79)

	POSITION TITLE			RANGE/STEP	BARG. UNIT.	LOCATION	GOV.	APPROV	DISAP
1	Administrative Officer II			19A	GG	Juneau			
2	TYPE OF POSITION: PFT	STAFF MONTHS: 3	RP No.	PCN No.	PRIORITY	FORM 12 PAGE/LINE	LEG		

	TYPE OF EXPENDITURE	1	2	AMOUNT 3
4	PERSONAL SERVICES: SALARY 2,355 X 3		$7,065	
5	BENEFITS 17.70%		1,251	
6	FICA		433	
7	HEALTH INS. 106 X 3		318	
8	TOTAL PERSONAL SERVICES	01		$ 9,067
9	TRAVEL	02		2,000
10	CONTRACTUAL	03		2,700
11	COMMODITIES	04		100
12	EQUIPMENT	05		1,000
13	OTHER			
14	TOTAL COST			$14,867

	CODE	FUNDING SOURCE	
15		FED RCPTS. 1002	
16		GF MATCH. 1003	
17		GEN. FUND 1004	$14,867
18		I-A RCPTS. 1005	
19		PGM RCPTS 1023	
20		OTHER	
21	CONTINUATION		
22	ADDITION		

FOR B&M USE ONLY

1A KEY NUMBER _____ COLUMN NO. _____

JUSTIFICATION:

The Internal Review Section of the Department of Labor conducted a management review of the BRU, and many of the recommendations from the study were incorporated into the recently submitted capital budget request.

In order to implement and operate the systems proposed in the capital budget, continuing support services are needed.

The Administrative Officer position is an integral part of the management plan to supervise the administrative process required to support the mediation and adjudication functions of the Board.

AGENCY Department of Labor PROGRAM AREA Worker Protection

BRU Workmen's Compensation

COMPONENT _____

FY 81

13 REQUEST FOR NEW POSITION.

REVISED DATE _____

02-1013 (Rev. 7/79)

FY 80 SUPPLEMENTAL REQUEST ANALYSIS

	1	2	3	4	5	6	7	8	9	10	
	FY 78 ACTUAL	FY 79 FINAL AUTH.	FY 79 ACTUAL	FY 80 GOV. BUDGET	FY 80 INITIAL AUTH.	FY 80 CURRENT AUTH.	FY 80 EXPENDITURES + ENCUMBRANCES 7/1/-11/30	FY 80 OTHER OBLIGATIONS 7/1/-11/30	FY 80 PROJECTED EXPENDI-TURES + ENCUMBRANCES 12/1-6/30	FY 80 (DEFICIT) OR EXCESS	FY 8 CONT
PERSONAL SERVICES	353.5	403.1	420.8	423.9	423.9	461.1	186.9	20.1	278.5	(24.4)	421
TRAVEL	39.9	43.7	41.6	52.3	40.8	52.3	26.2		60.5	(34.4)	49
CONTRACTUAL SERVICES	46.0	74.1	73.8	108.9	99.0	132.6	72.2		100.6	(40.2)	140
COMMODITIES	5.1	12.9	8.1	15.2	15.2	15.2	6.0		6.1	3.1	16
EQUIPMENT	.3	2.3	.3	2.8	-0-	.9	.8		1.9	(1.8)	-0
LANDS, BLDG. ...	3.1	3.2	5.8	3.2	3.2	3.2	3.2		-0-	-0-	-5
GRANTS, CLAIMS, ...	578.7	578.5	552.9	613.2	613.2	613.2	513.0		57.1	43.1	613
MISCELLANEOUS											
TOTAL	1,026.6	1,117.8	1,103.3	1,219.5	1,195.3	1,278.5	808.3	20.1	504.7	(54.6)	1,247
FEDERAL RECEIPTS											
REQUIRED GF MATCHING											
OTHER GENERAL FUND	1,026.6	1,117.8	1,103.3	1,219.5	1,195.3	1,278.5	808.3	20.1	504.7	(54.6)	1,247
INTER-AGENCY RECEIPTS											

AGENCY: Department of Labor BRU: Workmen's Compensation COMPONENT: Workmen's ompensation REVISED: _____

Funding Information:
General Fund: $54,600
Other Fund: -0-
$54,600

Introduced: 2/4/80
Referred: Labor & Management and Finance

IN THE HOUSE

BY THE RULES COMMITTEE BY REQUEST OF THE GOVERNOR

HOUSE BILL NO. 670

IN THE LEGISLATURE OF THE STATE OF ALASKA

ELEVENTH LEGISLATURE - SECOND SESSION

A BILL

For an Act entitled: "An Act making a supplemental appropriation to the Department of Labor, Division of Workers' Compensation; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* Section 1. The sum of $54,600 is appropriated from the general fund to the Department of Labor, Division of Workers' Compensation, to fund new positions for the period of April 1, 1980 -- June 30, 1980.

* Sec. 2. This Act takes effect immediately in accordance with AS 01.-10.070(c).

PROJECT TITLE	LOCATION(S)	AREA SERVED	ELECTION DISTRICT(S)
W/Comp. Information Handling System	Juneau	Statewide	All

OBJ. NO(S)	OPERATING BUDGET BRU(S) NAME(S)	BUDGET COMPONENT NUMBERS	START DATE	COMPLETION DATE
2 and 3	Workers Comp.	07-51-3-01-07-00		

PROJECT NARRATIVE

I. Project Need Statement

One of the objectives of the Workmen's Compensation Division is to assure timely first payment of benefits to claimants who have suffered time-loss due to injury or illness on the job. The present computer system is inadequate to provide timely management information or retrieval of claims data. In order to monitor claims activity for timely reporting and resolution, the Division receives copies of all injury reports, physicians reports and first and final payment reports from insurance carriers or self-insured employers. The present method for monitoring the approximately 20,000 cases per year includes 4 manual processes; receipt, sorting, assignment of case numbers and coding. These amount to more than 180,000 clerical transactions per year. Of these transactions 9 out of 10 must be completed before the Division can respond to or resolve problems. The Division, due to limited funding and workload increases has been unable to complete these mandatory processes in a timely manner. This untimeliness has prevented the consistent enforcement of the statutory claims payment provisions, resolution of disputes, where possible, before a board hearing is required, and the assurance that all documentation is present for the board to review. Further, the information availability is so untimely the staff spends inordinate time manually searching on any request for information from the parties to a claim. Searching for files is further complicated because time-loss cases are often out of circulation for statistical data entry. In addition, when action is being taken on a claim the case file is in the custody of a

PROJECT TYPE

- ☐ Building Construction (C)
- ☐ Other Improvement (I)
- ☐ Equipment (E)
- ☐ Land (L)
- ☐ Professional Services (P)
- ☒ Other (O)

APPROPRIATION REQUEST

1002	FED. RCPTS.	
1003	G/F MATCH	
1004	GEN. FUND	211.2
1005	I/A RCPTS.	
	G.O. BONDS	
	TOTAL	211.2

PROJECT CHARACTERISTICS

- ☐ Totally New Facility
- ☐ Addition to Existing Facility
- ☐ Renovation of Existing Facility
- ☐ Major Maintenance or Repair
- ☐ Supplement Previously Authorized Funds to Enable Completion
- ☐ One of Several Phases
- ☐ Major External Funding Source
- ☒ Other

PROJECT PURPOSES

- ☒ Protect Human Health & Safety
- ☐ Protect Capital Assets
- ☐ Protect Natural Resources or Natural Environment
- ☐ Improve Efficiency & Economy of State Government
- ☒ Improve Services or Accommodate Increased Demand for Services
- ☐ Accommodate New Program Requirements
- ☒ Respond to Legal or Policy Mandate
- ☐ Improve Efficiency & Economy of Alaskan Infrastructure
- ☐ Other

SITE FEATURES

NO	YES	
☐	☐	Site Currently Owned?
☐	☐	All Utilities Available?
☐	☐	Access Already Available?

OPERATIONAL COST & NO. PERSONNEL INCREASE (DECREASE)		FIRST OPERATING YEAR 82	ULTIMATE ANNUAL YEAR 83	PREVIOUS YR—PRIORITY
FUNDING SOURCE	FED. RCPTS.			AGENCY PRIORITY
	GEN. FUND	132.6	108.3	
				GOVERNOR'S PRIORITY
TOTAL ANNUAL OPERATIONAL COST		132.6	108.3	
POSITION (FTE) D.P. Maint.		1.0	.5	

ECONOMY Economic & Community Development AGENCY Labor PROGRAM Worker Protection

01-1035a (7/79)

35a PROPOSED CAPITAL PROJECT

REVISED DATE

CAPITAL PROJECT EXPENDITURES (CASH FLOW)	TOTAL	BUDGET YEAR	BUDGET YEAR Plus 1	BUDGET YEAR Plus 2	BUDGET YEAR Plus 3	BUDGET YEAR Plus 4	REMAINING COST
Planning and Engineering	211.2	211.2					
Land							
Construction							
Equipment							
Administration and Other							
Total Annual Expenditure (Capital Cost)	211.2	211.2					

CONTINUATION OF NARRATIVE

Compensation Officer, again removing the case records from circulation for review by the Second Injury Fund Officer or response to an inquiry.

A second objective of the Workmen's Compensation Division is to reduce the time the parties must wait for decisions of the Board after hearings. There is currently no retrieval system for researching Board or Supreme Court decisions; consequently decisions issued by the two regional panels are sometimes inconsistent with precedence and even each other. Access to a digest of prior decisions will provide a much needed research tool that will enable the Board to issue orders promptly and consistent with prior decisions. This will reduce hearings which are a result of court remands or Board modifications. The digest will provide immediate access to claimants and Employer/Carriers on precedent rulings of the Board and/or Court on similar issues which may enable the parties to resolve a dispute without a Board hearing. Also, the digest will be invaluable for training Board Members and Division staff.

II. Project Description

The primary requirements for an upgraded data processing and information handling system are (1) front-end batch data entry of key claimant information, (2) timely updates to the system, (3) on-line inquiry capability through remote terminals in Juneau, Anchorage and Fairbanks, (4) front-end microfilming of all active files, and (5) batch entry and on-line retrieval capability of the legal digest of prior decisions from the Board. To achieve these results, a Request For Proposal will be issued for a multi-phase project to include (1) definition of user requirements, (2) general design with redefined requirements of the project in phase I, (3) detail design and (4) programming through implementation. The Request For Proposal will further specify a random access microfilm capability under central office control and access to the Legislative Affairs STARS system for the legal digest of decisions.

The initial definition phase will include analysis of the current system for possible modification,

This proposed system will accomplish the following:

A. Claimant Injury File
   1. Front-end entry of injury/illness reports.
   2. Prompt timely first pays.
   3. Prompt listings of missing information and/or reports.
   4. Assist Worker Compensation Officers in maintaining current case files.
   5. Allows Worker Compensation Officers to promptly docket controverted cases for Board hearings.
   6. Provide accurate and timely management reports.
   7. Monitor final pay of Employer/Carrier with affirmation of claimant.
   8. Provide front-end coding for SDS report.
   9. Identify Employer/Insurance carrier.

B. Legal Digest File
   1. Provide Board with index of precedent decisions of similar cases. (indexed case files will be available at law libraries in Anchorage, Fairbanks and Juneau).
   2. Provide claimants, Employer, and/or carriers with same information.
   3. Insure consistent type of decisions from both panels of Board.
   4. Provide new Board members with a learning tool to enable them to reach quick and logical decisions.
   5. Maintain an updated central file of all Board and Court Decisions on Workers' Compensation cases.

CATEGORY _____ AGENCY _____ PROGRAM _____

CAPITAL PROJECT EXPENDITURES (CASH FLOW)	TOTAL	BUDGET YEAR	BUDGET YEAR Plus 1	BUDGET YEAR Plus 2	BUDGET YEAR Plus 3	BUDGET YEAR Plus 4	REMAINING COST
Planning and Engineering							
Land							
Construction							
Equipment							
Administration and Other							
Total Annual Expenditure (Capital Cost)							

CONTINUATION OF NARRATIVE

The physical requirements would be:

(a) 1 3M Micrapoint I Type Microfilm System
(b) 6-8 input-inquiry Terminals
(c) Disc Pacs for both claimant files and legal digest files
(d) Word processing system for decision writing which either direct accesses the computer or provides input to the computer. (possibly compatible with ATMS).

III. Documentation of Capital Costs

1 Microfilm: Estimate is based on a 3M micrapoint I type system:

Systems Interface	-	$ 2,251	
Mini computer	-	11,562	
600 Reader-Printer	-	8,700	
Screen	-	62	
Lens	-	191	
Work Station	-	747	
1st year maintenance	-	2,700	
TOTAL	-	26,213	(1)

2	Definition of User Requirements	-	25,000	(2)
3	General Design	-	20,000	(2)
4	Detail Design	-	60,000	(3)
5	Programming through Implementation	-	80,000	(4)

(1) This cost is based on current quotes for a random access type microfilming and retrieval system.
(2) These estimates are based on the study done in 1977 with a 15% increase added due to inflation. This study was done for the automation of the Pressure Vessel inspection and billing system.

CAPITAL PROJECT EXPENDITURES (CASH FLOW)	TOTAL	BUDGET YEAR	BUDGET YEAR Plus 1	BUDGET YEAR Plus 2	BUDGET YEAR Plus 3	BUDGET YEAR Plus 4	REMAINING COST
Planning and Engineering							
Land							
Construction							
Equipment							
Administration and Other							
Total Annual Expenditure (Capital Cost)							

CONTINUATION OF NARRATIVE

(3) This estimate takes into consideration using an existing system from a model state and redesign to meet the user needs. This Department has reviewed the Washington Department of Labor and Industries system and determined that this program would provide the necessary requirements of the Worker's Compensation Division.

(4) This estimate would be refined further in the final phase with costs of equipment, capability and availability of DP facilities in place at that time.

IV. Analysis of Estimated Impact on Operating Budget

The system envisioned will require on going operational funding in two cost objects within Workmen's Compensation;

A. Year One (FY 82)

300 contractual	Annual Cost
382 Data Processing services equipment rent through Division of Data Processing (DDP):	
a. 1 Terminal at Fairbanks with printer/line charges/modem	6,760
b. 2 terminals at Anchorage	13,520
c. 3 terminals at Juneau	20,280
d. DDP-charge back for storage; I/O usage; printing; overnight batch processing; inquiry (CPU,etc.) @ 200/workday	50,000
e. Personnel costs for (1.0 FTE) Programmer/analyst maintenance	35,000
TOTAL 382	125,560

CATEGORY Economic & Community Dev. AGENCY Labor PROGRAM Worker Protection

PROJECT TITLE Workers Comp. Info. Handling System

35b PROPOSED PROJECT ANALYSIS

REVISED DATE

01-10356 (7/79)

CAPITAL PROJECT EXPENDITURES (CASH FLOW)	TOTAL	BUDGET YEAR	BUDGET YEAR Plus 1	BUDGET YEAR Plus 2	BUDGET YEAR Plus 3	BUDGET YEAR Plus 4	REMAINING COST
Planning and Engineering							
Land							
Construction							
Equipment							
Administration and Other							
Total Annual Expenditure (Capital Cost)							

CONTINUATION OF NARRATIVE

400 Commodities
480 Operating Supplies

a.	Microfilm supplies for random access microfilm equipment	5,000
b.	Paper for Terminal printers	2,000
	TOTAL 480	7,000
	GRAND TOTAL OPERATING COSTS	132,560

B. Year Two (FY 83)

382(e)	½ FTE maintenance	18,000
	Contractual Total	100,800
480(a)&(b)	7% Inflation	7,490
	GRAND TOTAL OPERATING COSTS	108,290

V. Identification of Alternatives

A. The Department will request RFP respondents to identify viable alternative systems in response to Phase I.

B. An alternative is to leave the system as it is. The increasing court interest and inefficiency in information handling make continuance of a manual system undesirable in both a "quality of decision" and "timeliness" sense. The Department introduced administrative reforms in FY 78 with limited Data Processing support. The system was soon swamped and discarded because it didn't offer a solution that was meaningful in terms of timely output and workload reduction. (i.e., no ready access to information, no machine prompting on problems developing). It just changed the manual handling techniques.

C. An alternative is to adopt only one inquiry system ("STAIRS" model or claim processing).

CATEGORY Economic & Community Development AGENCY Labor PROGRAM Worker Protection

PROJECT TITLE Workers Comp. Info. Handling System

35b PROPOSED PROJECT ANALYSIS

REVISED DATE

01-10356 (7/79)

CAPITAL PROJECT EXPENDITURES (CASH FLOW)	TOTAL	BUDGET YEAR	BUDGET YEAR Plus 1	BUDGET YEAR Plus 2	BUDGET YEAR Plus 3	BUDGET YEAR Plus 4	REMAINING COST
Planning and Engineering							
Land							
Construction							
Equipment							
Administration and Other							
Total Annual Expenditure (Capital Cost)							

CONTINUATION OF NARRATIVE

1. Adaptation of "STAIRS" model, only, could be done for less cost since it is an adaptation of an existing system.
2. Adaptation of the claims processing system is more complex and would probably cost almost as much to design and implement as the total package since a model states system would require adaptation to Alaska's requirements.

CATEGORY Economic & Community Dev. AGENCY Labor PROGRAM Worker Protection

PROJECT TITLE Workers Comp. Info. Handling Syste

35b PROPOSED PROJECT ANALYSIS

REVISED DATE

CSHB 670

LETTER OF INTENT
HOUSE LABOR AND MANAGEMENT COMMITTEE
CS HB 670 (L&M)

It is the intent of the House Labor and Management Committee that the House Finance Committee, in its deliberations on CSHB 670, consider the possibility of additional funding for the purpose of publication of a Workers' Compensation booklet. The booklet should contain information for dissemenation to claimants to advise them of procedures and their rights and responsibilities under Alaska's Workers' Compensation law. The House Labor and Management Committee has requested that the Alaska Department of Labor, Division of Workers' Compensation, prepare an estimate of the cost of such a booklet.

Representative Vern Hurlbert
Chairman
House Labor and Management Committee

Representative Brian Rogers
Chairman
Subcommittee on Workers' Compensation
House Labor and Management Committee

RECORDS CERTIFICATION

I, the undersigned, an employee of the State of Alaska, do hereby certify that the microfilm images on this microform are accurate reproductions of the original records of the State of Alaska as accumulated during the regular course of business, and that it is the established policy and practice of this State to microfilm its records and to dispose of the original records after microfilm reproductions have been made.

James O Smith
Signature of Camera Operator

3/20/90
Date

loans under this section to applications for loans the purpose of which is to purchase and install fire protection equipment.

* Sec. 4. AS 45.95.020 is amended by adding a new subsection to read:

(e) The commissioner may not disqualify an applicant for, or prejudice the applicant's privilege to receive, a loan to purchase and install fire protection equipment on the basis of a prior or present loan to the applicant under AS 45.95.

* Sec. 5. AS 44.33.170 is amended by adding a new subsection to read:

(b) Tourist attraction development matching money may also be obtained for the purpose of purchasing and installing fire protection equipment for a building used or to be used for the purposes described in (a) of this section.

G

BRIAN R. SHUTE
ATTORNEY AT LAW
1026 WEST 4TH AVENUE, SUITE 208
ANCHORAGE, ALASKA 99501
(907) 274-6644

MAR 14 1980

March 12, 1980

The Honorable John C. Sackett
Chairman, Senate Finance Committee
Pouch V
Juneau, Alaska 99811

Re: Senate Bill 370 and House Bill 648

Dear Senator Sackett:

Enclosed are copies of three photographs which graphically illustrate the efforts required to put out a fire with the traditional hoses. Had the three buildings illustrated here been protected by sprinklers a large portion of the almost one million dollar loss could have been prevented, as well as the saving of one life.

These photographs are being sent to you to acquaint you with the problems encountered by fire departments in controlling and extinguishing fires of this magnitude. Private fire protection, which is encouraged by the above referenced companion bills, would reduce the number of disastrous fires of this nature. In addition to the savings resulting to the owners of the buildings, the municipalities would also profit through reduced costs for operating fire departments and water utilities, and the saving of tax revenue through preservation of the city's tax base.

Very truly yours,

Brian R. Shute

BRS:drw

Enc.

Alaska State Legislature

SENATOR MIKE COLLETTA

SENATE FLOOR LEADER

Senate

MEMORANDUM

FEBRUARY 27, 1980

TO: SENATOR JOHN SACKETT, CHAIRMAN
SENATE FINANCE

FROM: SENATOR MIKE COLLETTA

RE: SB 370/HB 648 Fire Prevention

The attached letter from James A. Van Altvorst, City Manager of Ketchikan is forwarded for your review.

Your attention to this matter is appreciated.

P.O. BOX 3100, ANCHORAGE 99501 • POUCH V JUNEAU 99811

SB 370
full pkw.
FEB 26 1980

CITY OF KETCHIKAN

334 FRONT STREET P. O. BOX 7300 TELEPHONE 907 225-3111

February 22, 1980

Senator Mike Colletta
Pouch V
Juneau, Alaska 99811

Dear Senator Colletta:

On behalf of the City of Ketchikan, I wish to add support to passage of Senate Bill 370, an act relating to fire prevention.

Approved automatic fire protection systems are obviously and definitely advantageous to the building in which they are installed. However, the benefits of those systems go far beyond the individual structures. They also benefit the entire community.

Essentially, installation of such systems decreases a community's "fire flow requirement" which is the community's ability to deliver water to control fires. A decrease in the "fire flow requirement", in effect, reduces the need for fire fighting equipment, facilities to house that equipment and staff to operate and maintain that equipment and facilities without reducing the level of fire protection in the community. Therefore, the entire community can benefit because of a reduction in the cost necessary to provide a given level of fire protection.

Because the entire community can benefit from the installation of approved fire protection systems in individual building, building owners should be given an incentive to install such systems rather than suffer additional fees or taxes because they installed those systems. Therefore, the City of Ketchikan supports Senate Bill 370.

If you have questions about the City's position on this issue, please contact me.

Sincerely,

James A. Van Altvorst
City Manager

JAVA:gw

ALASKA FIRE CHIEFS' ASSOCIATION

ALASKA STATE FIRE FIGHTERS ASSOCIATION

FIRE PROTECTION INCENTIVE PROGRAM

PRESERVE ALASKA'S ECONOMY

SUPPORT SENATE BILL 370 AND HOUSE BILL 648

KETCHIKAN

PACIFIC PEARL CRAB CANNERY

7 JULY 1968

MONETARY LOSS - $25,000

A GRAPHIC ILLUSTRATION

OF HOW THIS LEGISLATION WOULD
PRESERVE A CITY'S TAX BASE
SAVE WATER
SAVE FIRE DEPARTMENT EXPENDITURE

PRIVATE FIRE PROTECTION, ENCOURAGED BY
HOUSE BILL 648 AND SENATE BILL 370
WOULD HAVE CREATED A GREATER THAN 90 PERCENT
CHANCE THIS BUILDING WOULD HAVE BEEN SAVED


PAUL M. HANSEN CO.
GROCERY

ALASKA FIRE CHIEFS' ASSOCIATION

ALASKA STATE FIRE FIGHTERS ASSOCIATION

FIRE PROTECTION INCENTIVE PROGRAM

PRESERVE ALASKA'S ECONOMY

SUPPORT SENATE BILL 370 AND HOUSE BILL 648

KETCHIKAN

SMILEY'S CANNERY AND BOAT STORAGE

24 JULY 1968

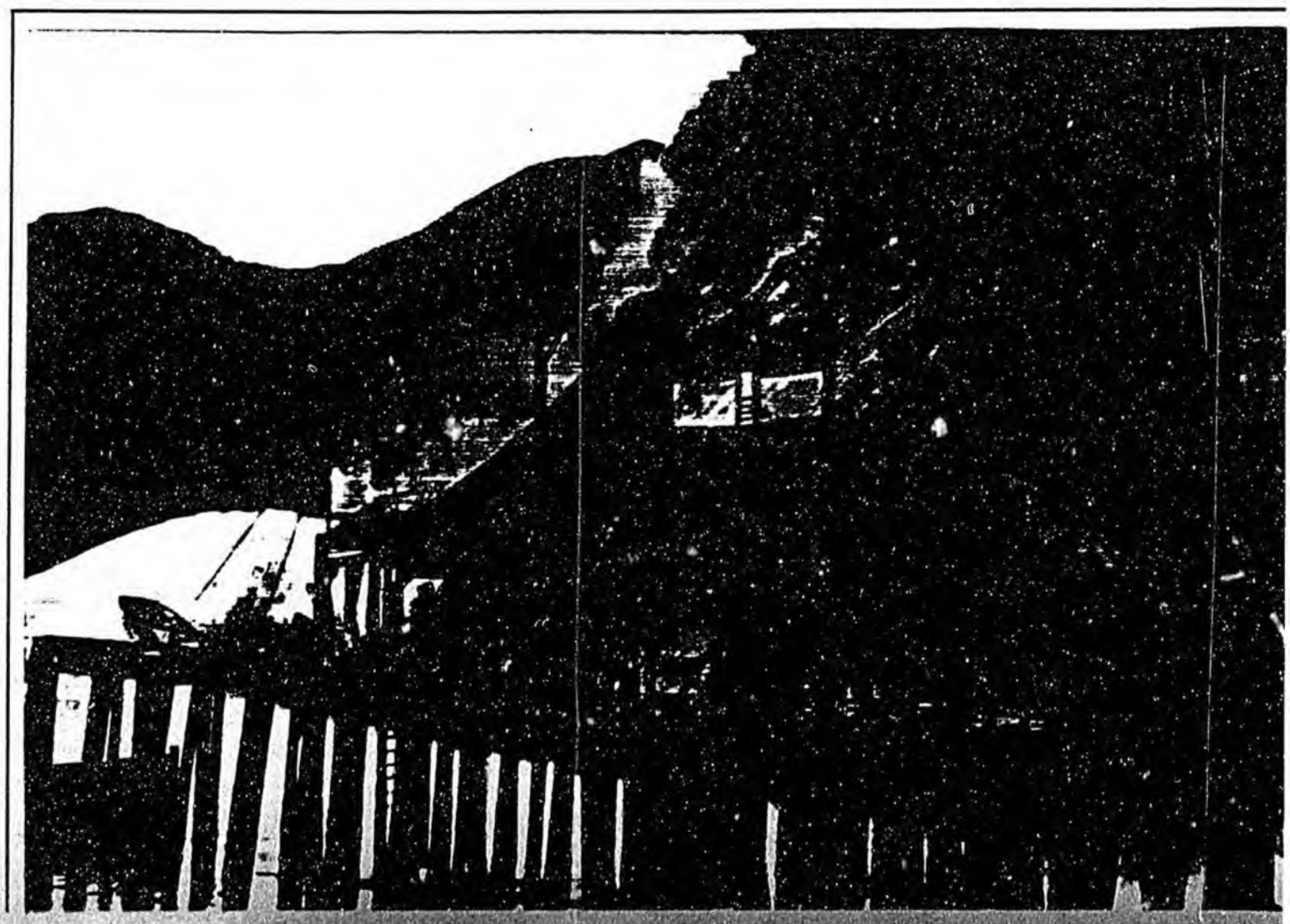
MONETARY LOSS - $77,000.

LOSS OF LIFE - 1 DEAD

A GRAPHIC ILLUSTRATION

OF HOW THIS LEGISLATION WOULD
PRESERVE A CITY'S TAX BASE
SAVE WATER
SAVE FIRE DEPARTMENT EXPENDITURE

PRIVATE FIRE PROTECTION, ENCOURAGED BY
HOUSE BILL 648 AND SENATE BILL 370
WOULD HAVE CREATED A GREATER THAN 90 PERCENT
CHANCE THIS BUILDING WOULD HAVE BEEN SAVED



ALASKA FIRE CHIEFS' ASSOCIATION

ALASKA STATE FIRE FIGHTERS ASSOCIATION

FIRE PROTECTION INCENTIVE PROGRAM

PRESERVE ALASKA'S ECONOMY

SUPPORT SENATE BILL 370 AND HOUSE BILL 648

KETCHIKAN

SMILEY'S CANNERY AND BOAT STORAGE

24 JULY 1968

MONETARY LOSS - $77,000.

LOSS OF LIFE - 1 DEAD

A GRAPHIC ILLUSTRATION

OF HOW THIS LEGISLATION WOULD
PRESERVE A CITY'S TAX BASE
SAVE WATER
SAVE FIRE DEPARTMENT EXPENDITURE

PRIVATE FIRE PROTECTION, ENCOURAGED BY
HOUSE BILL 648 AND SENATE BILL 370
WOULD HAVE CREATED A GREATER THAN 90 PERCENT
CHANCE THIS BUILDING WOULD HAVE BEEN SAVED

ALASKA FIRE CHIEFS' ASSOCIATION

ALASKA STATE FIRE FIGHTERS ASSOCIATION

FIRE PROTECTION INCENTIVE PROGRAM

PRESERVE ALASKA'S ECONOMY

SUPPORT SENATE BILL 370 AND HOUSE BILL 648

KETCHIKAN

NEW ENGLAND FISH CO. CANNERY

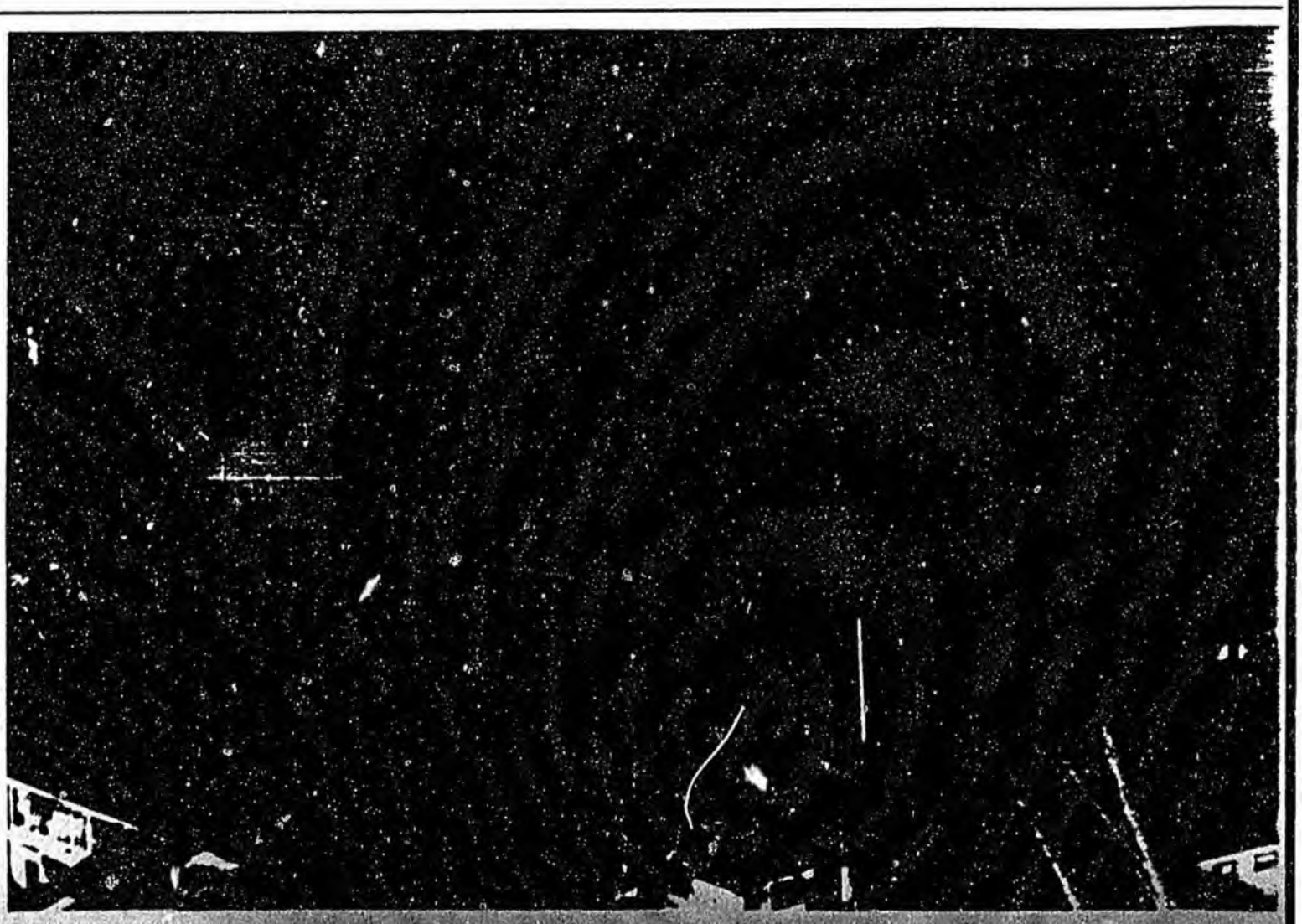
10 APRIL 1965

MONETARY LOSS - $854,492.

A GRAPHIC ILLUSTRATION

OF HOW THIS LEGISLATION WOULD
PRESERVE A CITY'S TAX BASE
SAVE WATER
SAVE FIRE DEPARTMENT EXPENDITURE

PRIVATE FIRE PROTECTION, ENCOURAGED BY
HOUSE BILL 648 AND SENATE BILL 370
WOULD HAVE CREATED A GREATER THAN 90 PERCENT
CHANCE THIS BUILDING WOULD HAVE BEEN SAVED



COMMITTEE REPORT

SENATE

FURTHER: None

4/23/80

Date: 5-5-80

Mr. President:

The Committee on FINANCE has had CSHB 648(Finance) fire prevention

under consideration and (a majority of the committee) (the committee) reports it back with the following recommendations:

[✓] do pass [ ] do not pass

[ ] do pass with attached amendments(s)

[ ] replace with CS for _____ [ ] same title [ ] new title

and recommends _____

[ ] AND attaches a "Letter of Intent" [ ] New Fiscal Note

[ ] reports it back without recommendation

[ ] referred to the _____ Committee

MEMBERS SIGNING
DO PASS

MEMBERS HAVING
OTHER RECOMMENDATIONS:

CHAIRMAN

S 60 (Rev. 12/78)

Original sponsors: Malone and Duncan

Offered: 4/21/80
Referred: Finance

IN THE HOUSE BY THE FINANCE COMMITTEE

CS FOR HOUSE BILL NO. 648 (Finance)

IN THE LEGISLATURE OF THE STATE OF ALASKA

ELEVENTH LEGISLATURE - SECOND SESSION

A BILL

For an Act entitled: "An Act relating to fire prevention."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* Section 1. AS 29.53.060(a) is amended to read:

(a) The assessor shall assess property at its full and true value as of January 1 of the assessment year, except as provided in this section and AS 29.53.030, 29.53.035, and 29.53.160. The full and true value is the estimated price which the property would bring in an open market and under the then prevailing market conditions in a sale between a willing seller and a willing buyer both conversant with the property and with prevailing general price levels. <u>The assessor may not include the value of a fire protection system in the assessment of the full and true value of a building.</u>

* Sec. 2. AS 29.53.060 is amended by adding a new subsection to read:

(d) In this section, "fire protection system" means a fire protection system as defined in the National Fire Codes published by the National Fire Protection Association.

* Sec. 3. AS 42.05.381 is amended by adding a new subsection to read:

(d) A utility may not charge a fee or surcharge for standby water for fire protection systems which use hydraulic sprinklers.

* Sec. 4. AS 42.05.701 is amended by adding a new paragraph to read:

(9) "fire protection systems" means fire protection systems as defined in the National Fire Codes published by the National Fire Protection Association.

* Sec. 5. AS 45.95.020(a) is amended to read:

(a) The commissioner shall, under regulations and policies adopted by him, make small business loans to acquire, finance or refinance or equip businesses, including farming equipment, fire protection equipment, mining and fishing, not exceeding $500,000. The loans shall be secured by acceptable collateral and may not exceed 75 percent of the appraised value of the collateral offered as security. The rate of interest may not exceed nine and one-half percent a year on the unpaid balance.

* Sec. 6. AS 45.95.020 is amended by adding a new subsection to read:

(c) The commissioner may not disqualify an applicant for, or prejudice an applicant's privilege to receive, a loan to purchase and install fire protection equipment because of a loan already made to the applicant under this chapter.

* Sec. 7. AS 45.95.080 is amended by adding a new paragraph to read:

(2) "fire protection equipment" means fire protection or fire alarm systems as defined in the National Fire Codes published by the National Fire Protection Association.

* Sec. 8. AS 44.33.170 is amended by adding new subsections to read:

(b) Tourist attraction development matching money may also be obtained for the purpose of purchasing and installing fire protection equipment for a building used or to be used for the purposes described in (a) of this section.

(c) In (b) of this section, "fire protection equipment" means fire protection or fire alarm systems as defined in the National Fire Codes published by the National Fire Protection Association.

FACT DIGEST

HOW PRIVATE FIRE PROTECTION CONSERVES PUBLIC RESOURCES BY REDUCING WATER NECESSARY FOR FIGHTING FIRES, BY REDUCING THE LOSS OF LIFE AND PROPERTY FROM FIRE, AND BY REDUCING COST OF FIGHTING FIRES

Compiled by Brian R. Shute, Attorney
For the Water Conservation Association

Anchorage, Alaska

TABLE OF CONTENTS

PART VII

PART I

S T A T I S T I C S

LOSS OF LIFE AND DAMAGE O PROPERTY FROM FIRE

FIRE CASUALTIES

Throughout the world fire takes a heavy toll of human life. The progress that has been made in controlling this tragic waste has been due primarily to the intelligent application of the principles of fire prevention and protection discussed in other sections of this HANDBOOK.

In this chapter, the present and past record of destruction of life by fires and explosions in the United States is reported, and the factors affecting life safety from fire are discussed. In the other chapters of this Section, property damage is similarly treated, fire investigating and reporting are discussed, and large loss fires and conflagrations are analyzed.

A. Deaths and Injuries by Fire

According to estimates by the NFPA Fire Analysis Department, the annual fire death toll in the United States has averaged about 12,000 per year over the last 20 years. The number increased in absolute terms until 1970. Since then, it has shown a slight decline. (In 1974 the estimate was 11,600, a decline of 100 from the previous year.) In general, the risk of death from fire to a given individual has been declining fairly steadily, as can be seen from the death rate per million population (see Fig. 1-2A).

A high fire death rate seems to be peculiarly an American problem. No other industrialized nation comes close to the American fire death rate (see Fig. 1-2B).

Fire Injuries

Personal injury by fire, always painful and often disfiguring, involves about ten times the number of deaths in the United States. According to estimates by the NFPA at least 123,000 fire-related injuries occurred in the United States in 1974. Every fire injury is a potential fatality, although improvement in medical techniques has substantially improved the chances of recovery from serious fire injuries.

Nonfatal fire casualties are principally due to burns and to the inhalation of carbon monoxide and other gaseous products of combustion, though many casualties involve various other types of injury.

Trend of Fire Casualties

The principal reason that gradual improvements in life safety have not resulted in a more significant downward trend in the actual number of fire casualties in the rapid growth of population in recent years. From 1964 to 1974 the number of people in the United States increased about 10 percent. During the same period, the annual death rate from fire decreased 2¼ percent.

The annual total of fire deaths is continuing, however, at a high level in spite of improvements in building construction, more widespread installation of automatic protection, more effective fire prevention campaigns, and more efficient fire department operation. While these factors have all had their effect in improving life safety from fire, there have been other offsetting factors, particularly the progressive increase in the smoking habit and the general increase in the use of flammable liquids.

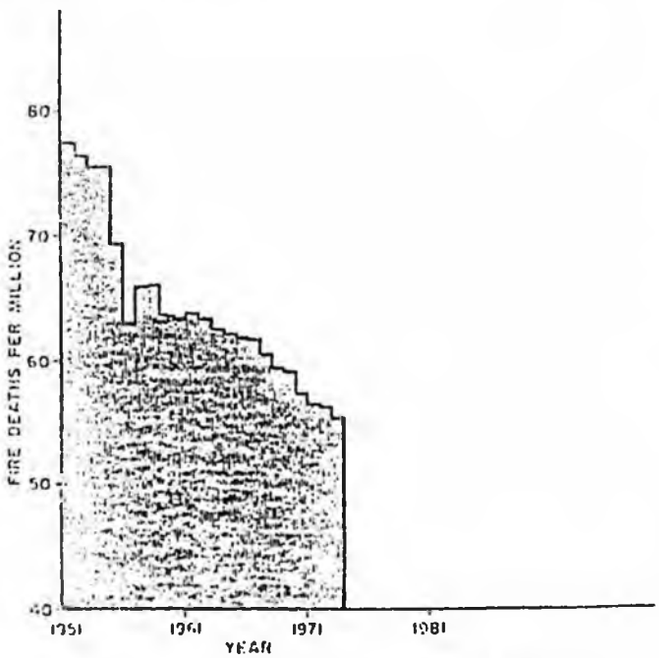


Fig. 1-2A. Trends in fire deaths in the United States.

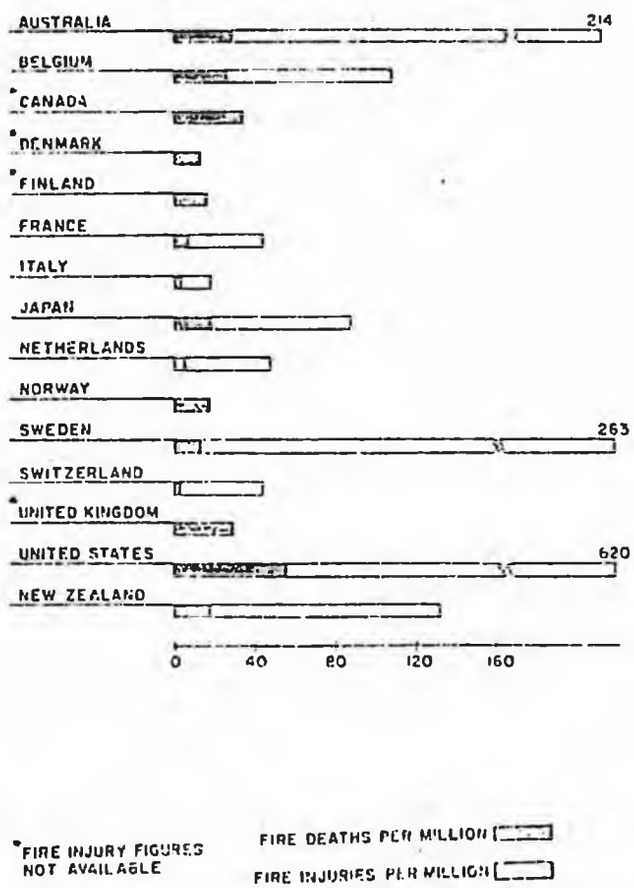


Fig. 1-2B. International fire deaths and injuries per million of population.

Source: National Fire Protection Association; Fire Protection Handbook, p. 1-5 14th edition 1976

When a going industry is struck by fire, and key processes or equipment sustain damage, serious business interruption can occur. Such business interruption can have one or more of the following effects:

1. Losses to the Fire-damaged Business
   (a) Loss of customers
   (b) Loss of return on capital investment
   (c) Loss of profits on finished goods
   (d) Loss of confidence of stockholders
   (e) Loss of credit standing
   (f) Loss of good will of customers, employees, and the community
   (g) Loss of trained personnel who transfer to other jobs
   (h) Cost of retaining key personnel during shutdown
   (i) Loss of productive services of key personnel retained during enforced shutdown
   (j) Seizure of fire insurance payments by uneasy creditors
   (k) Excessive replacement costs due to overtime, inability to buy at time most advantageous to buyer, etc.
   (j) Cost of demolition
   (m) Cost of replacing depreciated buildings and equipment with new facilities
   (n) Continuance of fixed charges during shutdown.
   (o) Cost of hiring temporary quarters
   (p) Loss of patterns, valuable records, and other items that cannot be replaced or can be replaced only at great cost
   (q) Loss of earning power of patents, trade marks, etc.
   (r) Loss of value of past advertising
   (s) Inability to defend against unjust claims due to loss of records
   (t) Loss of rent from tenants

2. Losses to the Community
   (a) Loss of circulation of employee payroll
   (b) Increased burden on welfare funds
   (c) Loss of business by suppliers of raw materials and services to fire-damaged plant
   (d) Loss of a labor market
   (e) Loss of taxes on destroyed property

In some special cases, a single fire can seriously hamper production in an entire industry. The 1954 fire in an automatic transmission plant, in Livonia, Mich., halted production for several months. Its transmissions were used in six makes of automobile. Their unavailability led to sharply depressed sales for five major U.S. automobile makers. Indirect losses were never accurately estimated.

Another example is a fire in a telephone exchange in downtown New York City in 1975 that disrupted service to 170,000 phones. The impact of such an outage on a major commercial center, such as the Wall Street financial district, is hard to assess, but it must have been substantial.

These two cases indicate the magnitude that indirect losses can assume.

Finally, there are indirect losses of a personal nature. These may be even more difficult to estimate, yet their importance should not be neglected. In addition to financial losses incurred through temporary unemployment and expenses incurred in finding and moving to new housing, there is the destruction of irreplaceable personal belongings.

Source: National Fire Protection Association; Fire Protection Handbook, p. 1-5 14th edition 1976

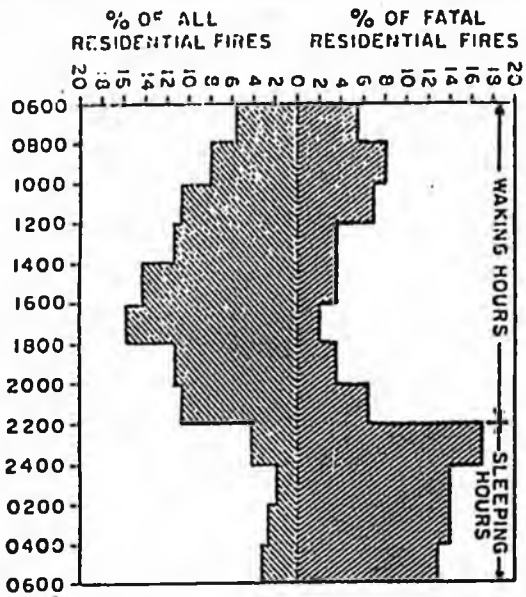


Fig. 1-2E. Time distribution of fatal residential fires.

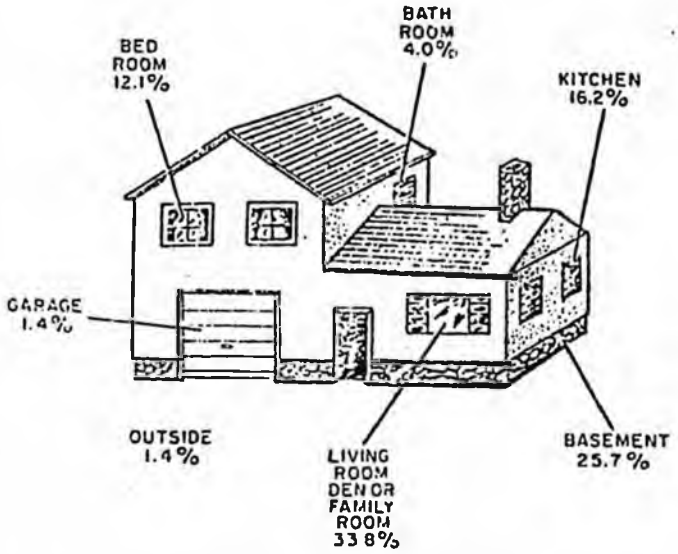


Fig. 1-2F. Locations where fatal fires start in one- and two-family dwellings (5.4 percent of the locations where fatal residential fires started were unknown.)

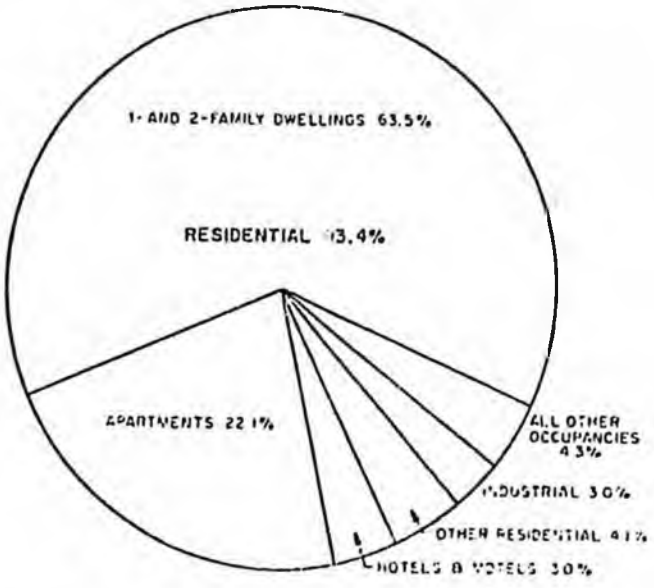


Fig. 1-2D. Occupancies where fire deaths in buildings occur.

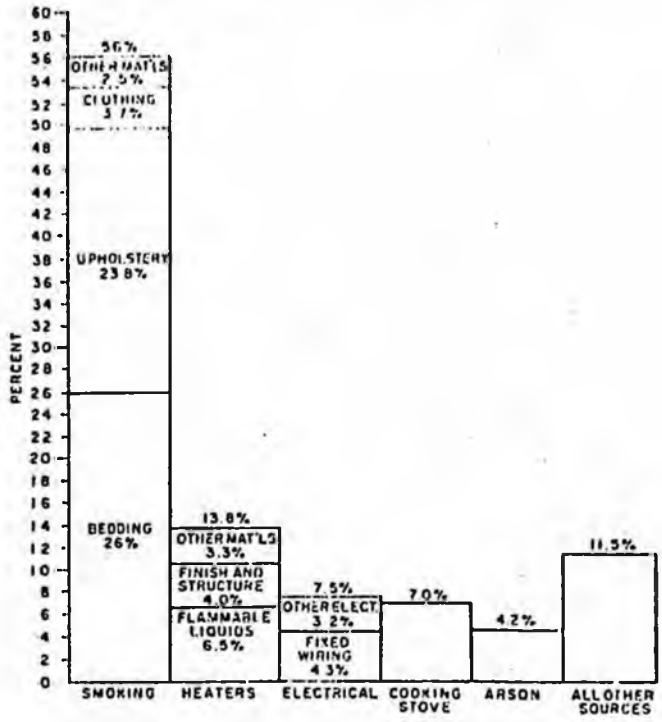


Fig. 1-2G. Causes of fatal residential fires.

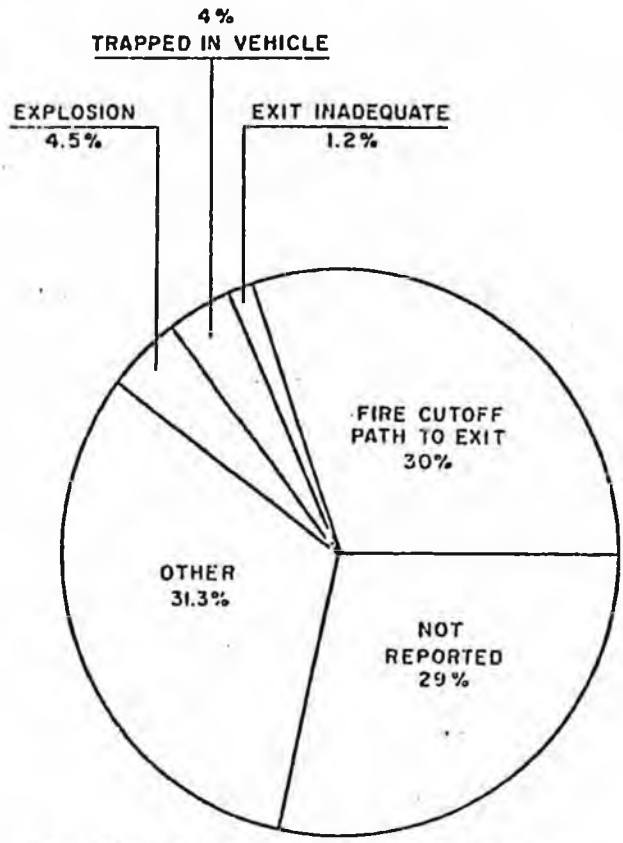


Fig. 1-2H. The reasons why fire victims do not escape.

Source: National Fire Protection Association; Fire Protection Handbook, p. 1-5 14th edition 1976

Table 1-3A. Number of Fires by Occupancy 1970–1974

	1970	1971	1972	1973	1974
Public Assembly Occupancies					
Amusement Centers, Ballrooms	2,300	2,400	2,400	2,300	3,100
Auditoriums, Exhibition Halls	700	700	700	600	600
Bowling Establishments	800	800	900	800	1,100
Churches	3,300	3,400	4,300	3,900	5,400
Clubs, Private	2,900	3,000	3,400	3,000	4,100
Restaurants, Taverns	17,800	18,200	21,700	19,500	26,800
Theaters, Studios	1,000	1,000	1,200	1,100	1,500
Transportation Terminals	600	600	600	500	600
Other Public Assembly Occupancies	1,600	1,600	2,600	2,400	3,600
Total:	31,000	31,700	37,900	34,100	47,000
Educational Occupancies					
Schools, thru 12th grade	13,000	15,700	17,200	18,900	27,800
Other Schools	4,000	4,800	5,200	5,200	7,700
Total:	17,000	20,500	22,400	24,100	35,500
Institutional Occupancies					
Rest & Nursing Homes	3,700	4,800	6,100	6,400	9,300
Hospitals	7,800	10,100	10,500	10,700	15,600
Mental Institutions	500	700	800	800	1,200
Other Institutions	2,000	2,600	3,800	3,700	5,400
Total:	14,000	18,200	21,200	21,600	31,500
Residential Occupancies					
Dwellings, 1–2 Family	547,000	536,000	562,500	587,200	661,400
Apartments	87,700	103,000	109,000	138,000	151,500
Hotels, Motels	13,400	15,200	16,400	21,700	30,200
Mobile Homes	22,600	25,000	27,400	25,100	29,700
Other Residential Occupancies	19,400	19,800	20,300	23,800	28,200
Mercantile & Office Occupancies	74,500	71,000	76,900	76,100	86,800
Appliance, Furniture Stores	4,000	3,800	4,100	4,100	4,700
Clothing Stores	4,400	4,200	4,500	4,500	5,100
Department, Variety Stores	5,200	5,000	4,600	4,500	5,700
Drugstores	3,000	2,900	2,900	2,900	3,300
Grocery Stores, Supermarkets	6,500	6,200	6,900	6,900	7,800
Motor Vehicle Sales, Repair	9,700	9,200	9,700	9,600	11,900
Offices, Banks	14,200	13,500	16,100	15,900	8,100
Service Stations	5,500	5,200	5,400	5,300	6,000
Other Mercantile Occupancies	22,000	21,000	22,700	22,400	24,200
Total:	690,100	699,000	735,600	795,800	901,000
Basic Industry, Defense Occupancies					
Electric Power Plants	3,900	2,900	3,100	3,000	3,100
Laboratories, Data Processing Ctrs.	900	600	800	800	800
Mines, Mineral Products Plants	2,000	1,500	1,600	1,600	1,700
Other Basic Industry Occupancies	1,800	1,300	1,500	1,500	1,600
Total:	8,600	6,300	7,000	6,900	7,200
Manufacturing Occupancies					
Beverage, Tobacco, Essential Oils	1,200	900	900	900	1,300
Drug, Chemical, Paint, Petroleum PL	4,200	3,100	3,800	3,600	4,900
Food Product Plants	5,100	3,700	3,700	3,600	5,700
Laundry, Dry Cleaning Plants	4,400	3,200	3,400	3,300	3,100
Metal, Metal Product Plants	4,700	3,500	4,100	4,000	5,700
Paper, Paper Product Plants	2,400	1,800	3,000	3,100	4,800
Plastic, Plastic Product Plants	1,300	1,000	1,900	1,900	3,700
Printing Plants	1,900	1,400	1,600	1,600	1,400
Textile, Textile Product Plants	3,800	2,800	3,500	3,500	3,900
Wood, Wood Product Plants	3,700	2,700	3,100	3,100	3,700
Other Manufacturing Occupancies	14,900	10,900	12,000	11,800	14,800
Total:	47,600	35,000	41,000	40,400	53,000
Storage Occupancies					
Barns, Stables	19,800	20,600	19,300	14,800	17,900
Bulk Plants, Tank Farms	1,400	1,500	1,500	1,100	1,400
Garages, Residential Parking	26,900	28,000	26,000	20,000	24,800
Grain Elevators	3,000	3,100	2,400	1,800	2,200
Lumber, Building Materials Storage	1,400	1,500	1,300	1,000	1,400
Sheds, Farm Outbuildings	15,000	15,600	14,000	10,800	12,700
Other Storage Buildings	10,600	11,000	10,400	7,600	8,100
Total:	78,100	81,400	74,900	57,300	68,500
Other Buildings	31,100	33,800	33,000	30,200	39,500
Total Building Fires:	992,000	996,600	1,050,200	1,035,900	1,270,000
Nonbuilding Occupancies					
Standing Crops	27,000	22,000	22,000	21,000	22,000
Forests	121,700	111,500	125,000	119,000	127,000
Grass, Brush, Rubbish	908,000	1,076,300	989,900	891,200	920,000
Motor Vehicles	479,700	501,000	550,300	574,000	640,000
Ships, Boats, RR	21,000	20,000	20,000	2,750	2,700
Aircraft, Aerospace Vehicles	150	200	200	250	300
Total Fires:	2,549,550	2,728,200	2,757,600	2,694,100	2,932,000

Source: National Fire Protection Association; Fire Protection Handbook, p. 1-5 14th edition 1976

Table 1-3B. Estimated Fire Losses by Occupancy

Public Assembly Occupancies					
Amusement Centers, Ballrooms	9,500,000	10,100,000	10,600,000	10,700,000	12,300,000
Auditorium, Exhibition Halls	5,500,000	5,500,000	5,600,000	5,600,000	7,500,000
Bowling Establishments	7,400,000	8,100,000	9,300,000	9,500,000	10,400,000
Churches	18,500,000	23,300,000	28,100,000	28,400,000	34,200,000
Clubs, Private	10,500,000	12,800,000	14,200,000	14,500,000	19,400,000
Restaurants, Taverns	46,000,000	50,900,000	54,300,000	54,900,000	65,300,000
Theaters, Studios	[illegible]	11,700,000	13,400,000	13,500,000	13,400,000
Transportation Terminals	2,900,000	2,800,000	2,600,000	2,600,000	3,500,000
Other Public Assembly Occupancies	8,900,000	13,700,000	15,100,000	15,300,000	15,400,000
Total:	$118,400,000	$138,900,000	$153,200,000	$155,000,000	$181,400,000
Educational Occupancies					
Schools, thru 12th grade	64,800,000	72,500,000	76,100,000	81,900,000	106,200,000
Other Schools	13,000,000	14,500,000	14,800,000	17,100,000	18,600,000
Total:	77,800,000	87,000,000	90,900,000	99,000,000	124,800,000
Institutional Occupancies					
Rest & Nursing Homes	2,700,000	3,500,000	3,900,000	3,600,000	5,900,000
Hospitals	8,500,000	11,100,000	12,200,000	12,400,000	20,400,000
Mental Institutions	1,000,000	1,300,000	1,500,000	1,500,000	2,500,000
Other Institutions	5,000,000	6,500,000	7,200,000	6,400,000	10,600,000
Total:	17,200,000	22,400,000	24,800,000	23,900,000	39,400,000
Residential Occupancies					
Dwellings, 1–2 Family	603,500,000	608,600,000	638,500,000	700,700,000	808,100,000
Apartments	132,800,000	151,400,000	151,600,000	265,300,000	288,100,000
Hotels, Motels	[illegible]	37,900,000	43,600,000	42,200,000	88,300,000
Mobile Homes	[illegible]	38,500,000	42,000,000	57,800,000	77,200,000
Other Residential Occupancies	[illegible]	39,700,000	42,700,000	37,400,000	50,100,000
Total:	841,700,000	874,100,000	918,400,000	1,163,400,000	1,302,800,000
Mercantile and Office Occupancies					
Appliance, Furniture Stores	28,000,000	24,800,000	28,100,000	27,500,000	32,600,000
Clothing Stores	[illegible]	19,400,000	21,800,000	20,900,000	27,900,000
Department, Variety Stores	[illegible]	35,600,000	41,900,000	40,700,000	53,300,000
Drugstores	[illegible]	11,200,000	11,800,000	11,400,000	12,900,000
Grocery Stores, Supermarkets	33,200,000	31,600,000	36,900,000	35,900,000	[illegible]
Motor Vehicle Sales, Repair	[illegible]	31,700,000	35,100,000	34,100,000	[illegible]
Offices, Banks	[illegible]	41,200,000	48,700,000	47,300,000	55,800,000
Service Stations	11,500,000	10,900,000	11,600,000	11,100,000	14,200,000
Other Mercantile Occupancies	132,000,000	125,800,000	141,800,000	137,800,000	154,200,000
Total:	[illegible]	332,200,000	377,700,000	[illegible]	[illegible]
Basic Industry, Defense Occupancies					
Electric Power Plants	[illegible]	8,600,000	24,700,000	[illegible]	[illegible]
Laboratories, Data Processing Ctrs.	2,600,000	2,000,000	2,800,000	[illegible]	[illegible]
Mines, Mineral Products Plants	44,100,000	39,700,000	44,500,000	41,000,000	[illegible]
Other Basic Industry Occupancies	8,700,000	7,900,000	9,600,000	9,400,000	[illegible]
Total:	64,800,000	58,200,000	81,600,000	76,300,000	88,400,000
Manufacturing Occupancies					
Beverage, Tobacco, Essential Oils	[illegible]	6,400,000	6,700,000	5,100,000	6,800,000
Drug, Chemical, Paint, Petroleum PL	76,000,000	73,700,000	94,900,000	89,000,000	[illegible]
Food Product Plants	41,400,000	40,200,000	42,200,000	39,600,000	58,600,000
Laundry, Dry Cleaning Plants	9,200,000	8,900,000	9,900,000	9,200,000	[illegible]
Metal, Metal Product Plants	46,500,000	45,100,000	54,400,000	51,700,000	[illegible]
Paper, Paper Product Plants	[illegible]	8,100,000	11,800,000	11,000,000	[illegible]
Plastic, Plastic Product Plants	[illegible]	11,200,000	16,500,000	16,700,000	[illegible]
Printing Plants	[illegible]	5,300,000	6,400,000	6,100,000	[illegible]
Textile, Textile Product Plants	[illegible]	16,100,000	18,100,000	15,700,000	[illegible]
Wood, Wood Product Plants	[illegible]	38,600,000	46,500,000	43,600,000	[illegible]
Other Manufacturing Occupancies	81,400,000	93,900,000	82,000,000	76,700,000	[illegible]
Total:	342,700,000	332,500,000	389,000,000	364,400,000	584,900,000
Storage Occupancies					
Barns, Stables	[illegible]	85,000,000	81,000,000	74,400,000	[illegible]
Bulk Plants, Tank Farms	[illegible]	8,300,000	10,300,000	9,300,000	[illegible]
Garages (Residential Parking)	29,800,000	31,000,000	30,500,000	27,900,000	[illegible]
Grain Elevators	47,800,000	49,800,000	42,800,000	39,300,000	51,300,000
Lumber, Building Materials Storage	20,400,000	21,300,000	20,700,000	18,900,000	[illegible]
Sheds, Farm Outbuildings	30,200,000	31,500,000	30,100,000	27,600,000	36,600,000
Other Storage Buildings	[illegible]	131,800,000	111,800,000	102,600,000	[illegible]
Total:	[illegible]	358,700,000	327,200,000	300,000,000	[illegible]
Other Buildings	52,900,000	62,200,000	53,500,000	48,500,000	[illegible]
Total Building Fires:	2,209,200,000	2,266,000,000	2,416,300,000	2,537,200,000	3,260,000,000
Nonbuilding Occupancies					
Standing Crops	[illegible]	26,000,000	29,000,000	37,000,000	36,200,000
Forests	[illegible]	119,000,000	128,000,000	126,000,000	169,700,000
Grass, Brush, Rubbish	—	—	—	—	
Motor Vehicles	[illegible]	112,660,000	127,300,000	135,300,000	[illegible]
Ships, Boats, RR	29,000,000	27,600,000	29,200,000	30,300,000	[illegible]
Railroad Rollingstock	—	—	—	—	—
Aircraft, Aerospace Vehicles	145,000,000	[illegible]	[illegible]	150,000,000	181,000,000
Total Fire Losses:	$2,630,400,000	$2,743,200,000	$2,927,800,000	$3,020,800,000	$3,819,100,000

Source: National Fire Protection Association; Fire Protection Handbook, p. 1-5 14th edition 1976

PART II

S T A T I S T I C S

HOW SPRINKLERS OPERATE AND THEIR EFFECTIVENESS AT REDUCING LOSSES CAUSED BY FIRE

FUNDAMENTALS OF SPRINKLER PROTECTION

Automatic fixed extinguishing systems are the most effective means of controlling fires in buildings. In order to understand the capabilities of these systems, a thorough understanding of their use is essential. This Section deals with one such extinguishing system; sprinklers.

A. Development of Sprinkler Protection

The rapid growth of business and industry and the resultant increase in fire hazards and property values brought about the need for more adequate protection against fire. The difficulty of reaching a fire with hose streams has often been demonstrated, and such simple fire protection as water pails, standpipes, and hose equipment has proved inadequate unless the fire was discovered in its early stages. Although fire control has been made easier by improved building construction, comparatively little headway was made in reducing fire loss involving delayed detection until the advent of the automatic sprinkler.

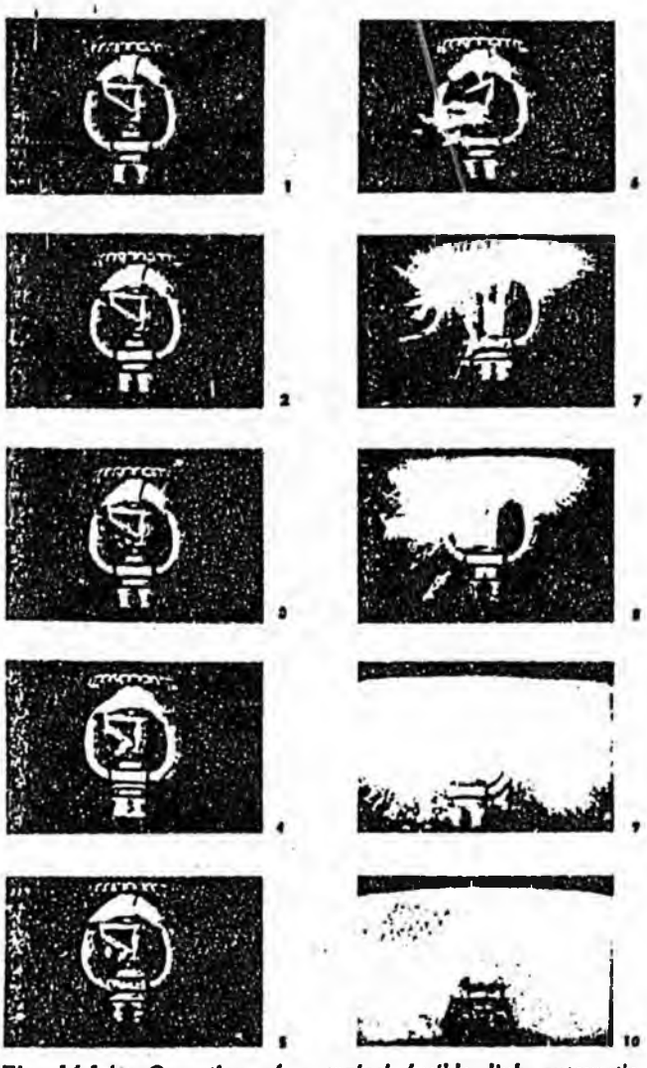


Fig. 14-1A. Operation of a typical fusible link automatic sprinkler is shown in this sequence of photos. As heat melts the solder, separation of members of the soldered link (the sloping side of the triangle in photos 1 to 5) is followed by complete separation of the link and lever arrangement (photo 6) which releases the cap over the sprinkler orifice allowing water to escape and strike the deflector (photos 7 to 10).

The Automatic Sprinkler

Automatic sprinklers are devices for automatically distributing water upon a fire in sufficient quantity either to extinguish it entirely or to prevent its spread in the event that the initial fire is out of range of, or is of a type that cannot be extinguished by, water discharged from sprinklers. The water is fed to the sprinklers through a system of piping, ordinarily suspended from the ceiling, with the sprinklers placed at intervals along the pipes. The orifice of the fusible link automatic sprinkler is normally closed by a disk or cap held in place by a temperature-sensitive releasing element. Figure 14-1A shows in stop-action photo sequence the operation of a typical fusible link, upright automatic sprinkler.

Perforated Pipe and Open Sprinkler Systems

The forerunners of the automatic sprinkler were the perforated pipe and the open sprinkler. These were installed in a number of mill properties from 1850 to 1880 (see Fig. 14-1B). The systems were not automatic, the discharge openings in the pipes often clogged with rust and foreign materials, and water distribution was poor.

Open sprinklers, an improvement over perforated pipes, consisted of metal bulbs with numerous perforations attached to piping and intended to give improved water distribution. This system was only slightly better than the perforated pipe.

Early Automatic Sprinklers

The idea of automatic sprinkler protection, whereby heat from a fire opens one or more sprinklers and allows the

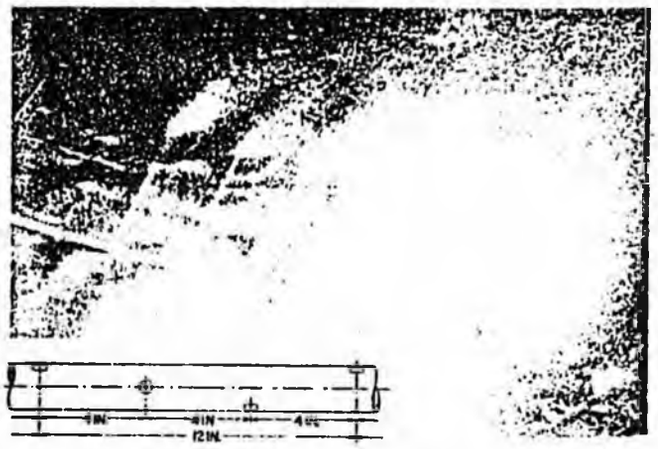


Fig. 14-1B. Early Perforated Pipe Sprinkler System: Water is shown discharging from a length of pipe representing what was the type of sprinkler protection in use from 1850 to about 1880. The inset shows the locations of perforations and the distances between them on a typical length of perforated pipe as was installed by the Providence Steam and Gas Pipe Co. (Grinnell Corp.)

Source: National Fire Protection Association; Fire Protection Handbook, pp. 14-1 through 14-48 14th edition 1976

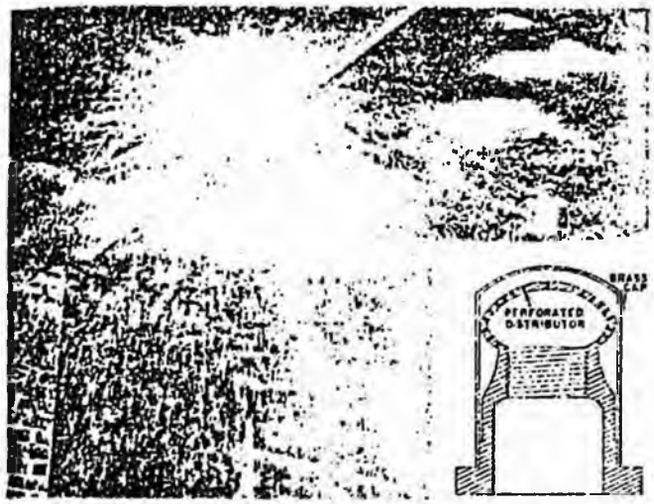


Fig. 14-1C. An Early Automatic Sprinkler: Water is shown discharging from a Parmalee No. 3 upright sprinkler which was first used in 1875. It consisted of a brass cap soldered over a perforated distributor and was designed to screw onto a nipple. The inset shows a cross-sectional view of the sprinkler.

water to flow, dates back to about 1860. Its practical application in the United States, however, began about 1878 when the Parmelee sprinkler was first installed. This sprinkler, while very crude when compared with modern devices, gave generally good results and proved conclusively that automatic sprinkler protection was both practical and valuable. (See Fig. 14-1C.)

B. Value of Automatic Sprinkler Protection

Automatic sprinkler protection helped develop modern industrial, commercial, and mercantile practices. Large areas, high buildings, hazardous occupancies, large values, or many people in one fire area, all tend to develop conditions which cannot be tolerated without automatic fixed fire protection. Part C of this chapter contains material on the performance of automatic sprinkler systems.

Safety to Life

Automatic sprinklers, properly installed and maintained, provide effective safeguards against loss of life by fire. Their value is psychological as well as physical: they give a sense of security to the occupants of buildings, and minimize the possibility of panic.

NFPA records of loss of life by fire show that in completely sprinklered buildings fire fatalities have been minimal.* They are limited to situations where sprinklers cannot be expected to be effective, such as in cases where the water is shut off, or where suffocation occurs before a fire is large enough to cause sprinklers to operate. Loss of life can also be caused by explosions where sprinklers have no opportunity to be effective.

Automatic sprinklers are particularly effective for life safety because they give warning of the existence of fire, and at the same time apply water to the burning area. With sprinklers there are seldom problems of access to the seat of the fire, or of interference with visibility for fire fighting due to smoke. While the downward force of the water discharged from sprinklers may lower the smoke level in a room where a fire is burning, the sprinklers also serve to cool the smoke and make it possible for persons to remain in the area much longer than they would if the room were without sprinklers.

Objections sometimes advanced against automatic sprinkler installation in the interest of life safety are generally based on misconceptions of the basic characteristics of sprinkler protection. The opinion is sometimes expressed that sprinkler discharge might drench people and cause panic or illness. This objection ignores the fact that without sprinklers the same people in the fire area would perhaps be burned to death. There is no case in the NFPA records of over 100,000 fires in sprinklered buildings where water from automatic sprinklers has in any way contributed to panic or caused any other hazard to occupants.

Another common misconception is that *all* sprinklers discharge water at the time of fire. This is not the case, as most fires are controlled by only a few sprinklers in the immediate vicinity of the fire.

Other objections to automatic sprinkler protection are based upon cost, and occasionally upon appearance. These objections are unsound where conditions are such that sprinklers are needed for life safety. Sprinklers are generally no more expensive than some decorative floor coverings, and aesthetic designs are available in sprinklers.

Contrary to popular opinion, automatic sprinklers are practicable for dwellings and other small properties. In country areas where water supplies are limited, a pressure tank can be provided with sufficient capacity to control the fire during evacuation.

NFPA 101, Life Safety Code, recognizes sprinklers in numerous ways, particularly to offset deficiencies in existing buildings. For example, longer travel distances to exits and interior finish of a higher combustibility are permitted with sprinklers.

Recent developments in the sprinkler industry have resulted in systems and discharge devices that will cycle on and off. When a fire occurs, this system reacts to the increase in temperature and discharges water. When the temperature decreases to a predetermined level because the fire has been controlled or extinguished, the system automatically stops the flow of water. Should the fire flare up again, the system will repeat this cycle. This cycling continues until the fire is either out or the system is shut off.

Protection of Property

Figures available on the fire loss in manufacturing and mercantile properties where sprinklers are installed show a much better loss/value ratio than these properties not so equipped. Insurance may largely compensate for property loss, but a severe fire loss goes much further.

Prevention of Business Interruption

In addition to the saving in direct fire losses due to sprinkler protection, there is a saving represented by the

* The only fatalities in fully sprinklered properties reported to the NFPA were caused by explosions or flash fires; by ignition of the bedding or clothing of a person who was too young, too old, too intoxicated, or too handicapped in some other way to protect himself properly; by closure of water supply valves to the sprinkler system; or by hazards too severe for effective sprinkler performance in the protected property. Explosions in sprinklered properties have caused fatal injuries to occupants or have so damaged sprinkler piping as to render the systems virtually useless, with resultant loss of life. Severe flash fires have under unusual conditions traveled in advance of sprinkler operation, trapping victims before they had time to reach safety.

In those isolated instances of fatalities to sleeping, handicapped, or intoxicated persons, ignition of clothing or bedding caused fatal burns or asphyxiation either because the small fire did not generate sufficient heat to fuse a sprinkler, or because the victim had suffered fatal injuries before the sprinkler operated. In these latter instances, however, the sprinklers protected the lives of persons in adjoining areas.

Source: National Fire Protection Association; Fire Protection Handbook, pp. 14-1 through 14-48 14th edition 1976

freedom from business interruption. There also is an undetermined but possibly even greater reduction in conflagration and exposure losses, which reasonably may be attributed to automatic sprinkler protection. The destruction of property and its adverse association and sometimes permanent effect upon business may be, and often is, a great hardship, not only to the owner, tenants, and employees, but also to the community as a whole. Safeguarding a business from serious interruption by fire is often a determining factor in a decision to install sprinkler protection.

In many situations, sprinkler protection is required by law for specific parts of the building only. Where partial systems are required, complete systems should be installed. Partial systems are not cost effective. Should the fire start remote to the system, it will have no effect on the growing fire. Should the fire burn into the protected area, it will generally have developed sufficient intensity to overpower the sprinklers, thereby wasting water needed by the fire service to fight the fire.

Minimizing of Water Damage

Standard sprinkler systems have devices which automatically give an alarm in case of sprinkler operation; thus, they not only apply water at the point most needed, but also give an audible signal. This permits immediate check of fire conditions and minimizes water damage.

A properly installed sprinkler system will generate less water damage than the application of hose streams by the fire service. Sprinklers are not hampered in their operation by smoke or heat as is the fire service. Sprinklers can apply water efficiently and promptly to the seat of the fire. For this reason, they are one of the greatest life-saving tools of the fire service.

Fear of water damage is sometimes offered as an objection to the installation of automatic sprinkler protection. This comes in part from the thoughtless emphasis placed upon water damage in news reports of fires. Statements that a fire was of insignificant size, but that water damage was severe have been frequent. The probability of very severe destruction by fire in the absence of automatic sprinkler protection is seldom mentioned in these news accounts.

Accidental discharge of water from an automatic sprinkler system or other parts of a fire service water system due to defects in sprinklers, water control devices, piping, or associated equipment, is very rare. Precautions to prevent unnecessary discharge of water as a result of mechanical injury, freezing or overheating, or corrosion are covered in Chapter 6 of this Section.

Economics of Sprinkler Protection

In addition to the protection against destruction of property values and interruption to business, the saving in insurance costs often makes the expenditure for automatic sprinkler protection a sound business investment.

Many buildings do not have automatic sprinkler protection because the per dollar cost of the protection has appeared unjustifiably high to the building owners in relation to the value of the building.

Savings in insurance premiums alone could in numerous cases be adequate to finance, over a few years time, the installation of automatic sprinkler protection. Of equal importance are the many building code "trade-offs" that are allowed when sprinklers are installed. These "trade-offs" permit an increase in undivided area and often less fire resistance for the building construction, and therefore less erection cost. No value can be placed on the life safety aspects of total sprinkler protection or the security occupants feel when such systems are installed.

C. Record of Automatic Sprinkler Performance

Periodically the NFPA prepares summaries of sprinkler performance from the fire data reported to its Fire Analysis Department. The information is published in the NFPA *Fire Journal* as the Automatic Sprinkler Performance Tables, and is also available in pamphlet form.[1]

Effectiveness of Automatic Sprinklers

Only in rare instances do automatic sprinkler systems fail to control fires. The failures are very seldom due to the sprinklers themselves, but rather to the lack of water. Even with older types of sprinklers which are no longer approved, the failure of the sprinkler itself has been very infrequent. Failure of the modern types under normal conditions is practically unknown. Some 117,770 fires in sprinklered buildings have been reported to the NFPA since 1897. Of these, 95 percent of the sprinklers showed satisfactory performance.

Because numerous fires extinguished by one or two sprinklers (with only a slight loss) are not reported to NFPA, the NFPA records do not represent the total number of fires in sprinklered properties. If it were possible to include a complete record, the efficiency of sprinkler performance would probably approach 100 percent.

It should be noted that recorded data reflect only the efficiency of operation, and are but indirectly related to the amount of fire losses. For example, where sprinklers do not operate because the water is shut off, unsatisfactory performance is recorded even though the fire may have been promptly discovered and extinguished by other means. Figure 14-1D shows graphically cumulative data from 1970 to 1974 on the number of sprinklers operating.

In recent years, the apparent percentage of satisfactory sprinkler operations has declined. From 1970 to 1974 it was 81 percent. This may be the result of the NFPA's data-gathering system which concentrates on those fires causing larger losses. Other studies (N.Y. Board of Fire Underwriters, Factory Mutual, etc.) that are based on approximately 100 percent reporting show considerably higher rates. The same is true of Australian records where all sprinkler actuations are reported.

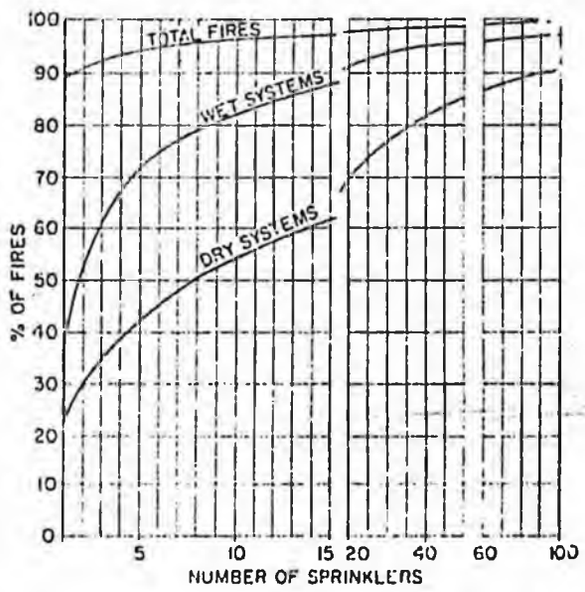


Fig. 14-1D. Number of sprinklers operating, cumulative data, 1970–74.

Source: National Fire Protection Association; Fire Protection Handbook, pp. 14-1 through 14-48 14th edition 1976

Effectiveness of Sprinklers by Occupancy Groups

Table 14-1A shows characteristic differences in sprinkler effectiveness for 22 major occupancy groups. As would be expected, some situations present a more difficult extinguishing problem than do others. This record of effectiveness is useful in evaluating the need for specially designed systems or auxilliary fire fighting facilities.

Unsatisfactory Sprinkler Performance by Occupancy Groups

Table 14-1A also lists by occupancy the reasons for unsatisfactory sprinkler performance for the same 22 occupancy groups. Closed sprinkler control valves are the most frequent cause, being responsible for 36 percent of the unsatisfactory performance reported. A study of the fires not controlled by sprinklers is of great importance, as it shows how to guard against such occurrences. It will be noted from Table 14-1A and from Figure 14-1E that in most cases there is a definite explanation for unsatisfactory performance. A more detailed analysis of unsatisfactory sprinkler performance will be found in the 1970 edition of the NFPA Automatic Sprinkler Performance Tables.[1]

D. Standard Sprinkler Installations

The terms "sprinkler protection," "sprinkler installations," and "sprinkler systems" usually signify a combination of water discharge devices (sprinklers); one or more sources of water under pressure; water-flow controlling devices (valves); distribution piping to supply the water to the discharge devices; and auxiliary equipment, such as alarms and supervisory devices. Outdoor hydrants, indoor hose standpipes, and hand hose connections are also frequently a part of the system that provides protection. Figure 14-1F is an illustration of a typical sprinkler installation with all common water supplies, outdoor hydrants, and underground piping.

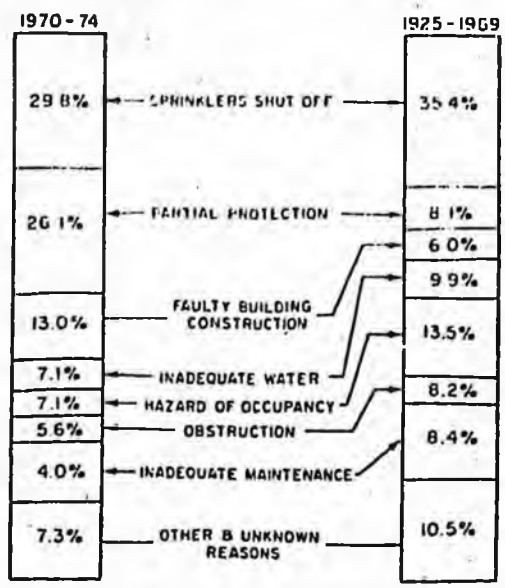


Fig. 14-1E. Reasons for unsatisfactory sprinkler performance.

When considering water supply problems, the performance of sprinklers, dry-pipe or wet systems, or special arrangements of sprinkler protection, the designation "sprinkler system" applies to the sprinklers controlled by a single water supply valve. Under this definition large buildings require several sprinkler systems, and a single water system may supply a number of sprinkler systems.

The fundamentals of sprinkler protection evolve around the principle of the automatic discharge of water, in sufficient density, to control or extinguish a fire in its incipiency. In planning for a system that fulfills this objective, many factors must be considered. They can, however, be broadly grouped into four categories: the sprinkler system itself, features of building construction, hazards of occupancy, and water supplies.

Table 14-1A. Sprinkler Performance Summary and Classification of Unsatisfactory Performance*

	Performance Summary				Classification of Unsatisfactory Performance												
Occupancies	Total No. of Fires	Total Unsatisfactory	Total Satisfactory	Total Satisfactory Per Cent	Water Shut Off	Partial Protection	Inadequate Water Supplies	System Frozen	Slow Operation	Defective Dry-Pipe Valve	Faulty Building Construction	Obstruction to Distribution	Hazard of Occupancy	Exposure Fire	Inadequate Maintenance	Antiquated System	Miscellaneous and Unknown
Residential	1,073	48	1,025	95.5	13	9	5	1	—	—	11	3	1	—	2	2	1
Assembly	1,551	52	1,499	96.6	23	10	3	—	1	—	9	1	—	1	4	—	—
Educational	241	20	221	91.7	4	8	1	—	—	—	5	—	—	—	1	1	—
Institutional	305	12	293	96.1	3	3	2	—	—	—	1	—	1	—	—	—	2
Office	494	13	481	97.4	4	2	1	—	—	1	2	—	1	—	1	1	—
Mercantile	6,237	176	6,061	97.2	83	11	4	4	4	5	35	11	12	1	4	1	1
Industrial																	
Beverages, essential oils	543	64	479	88.2	17	4	9	—	—	1	2	1	18	3	3	5	1
Chemicals	4,147	198	3,949	95.2	33	11	19	—	3	3	1	13	95	2	12	1	6
Fiber products	539	25	514	95.3	6	—	4	1	—	2	—	5	4	—	2	1	—
Food products	2,484	133	2,351	94.6	43	11	8	1	2	1	7	9	29	4	12	1	5
Glass products	519	23	496	95.6	8	—	3	1	—	—	2	1	5	—	3	—	—
Leather, leather products	2,864	114	2,750	96.0	43	8	7	3	2	4	9	7	9	4	9	6	3
Metal, metal products	9,807	305	9,502	96.9	91	36	22	3	6	6	15	35	43	6	29	7	6
Mineral products	394	19	375	95.2	10	4	2	—	—	—	1	—	—	—	1	1	—
Paper, paper products	7,147	234	6,913	96.7	75	16	34	3	2	2	16	32	21	2	23	4	4
Rubber, rubber products	1,489	61	1,428	95.9	21	4	3	—	1	1	1	10	14	1	5	—	—
Textiles—Manufacturing	16,119	291	15,828	98.2	109	15	32	3	5	3	11	27	18	1	50	9	8
Textiles—processing	6,527	127	6,400	98.1	52	6	11	—	5	1	8	13	15	2	7	1	6
Wood products	5,353	492	4,861	90.8	137	57	84	9	16	14	27	19	77	8	24	12	8
Miscellaneous industries	9,013	265	8,748	97.1	146	15	14	8	3	—	12	11	18	3	27	8	—
Total (Industrial)	66,945	2,351	64,594	96.5	791	187	252	32	45	38	112	183	366	36	207	56	46
Storage Occupancies	4,160	375	3,785	91.0	122	24	43	5	6	9	10	57	38	11	40	3	7
Other Occupancies	419	87	332	79.2	67	—	—	2	—	—	2	1	5	3	3	1	3
Total (All Occupancies)	81,425	3,134	78,291	96.2	1,110	254	311	44	56	53	167	256	424	52	282	65	60

* From the 1970 edition of the NFPA Automatic Sprinkler Performance Tables.

Source: National Fire Protection Association; Fire Protection Handbook, pp. 14-1 through 14-4814th edition 1976

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[1] "Automatic Sprinkler Performance Tables," 1970 Ed., *Fire Journal*, Vol. 64, No. 4, July, 1970, pp. 35-39.

[2] Thompson, N. J., *Fire Behavior and Sprinklers*, National Fire Protection Association, Boston, 1964, pp. 104-110.

[3] Welh, W. A., "Automatic Sprinklers in Exhibition Halls," *Fire Technology*, Vol. 4, No. 2, May 1968, pp. 115-125.

[4] Thompson, N. J., "Hazard of High Piled Combustible Stock," NFPA *Quarterly*, Vol. 43, No. 1, July 1949, pp. 38 46.

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Source: National Fire Protection Association; Fire Protection Handbook, pp. through 14th edition 1976

AUTOMATIC SPRINKLER PERFORMANCE TABLES

NATIONAL AUTOMATIC SPRINKLER AND FIRE CONTROL ASSOCIATON, INC.

SUMMARY — LIFE SAFETY OCCUPANCIES

Occupancy	No. of Fires	No. of Fires Extinguished	No. of Fires Held In Check	Satisfactory Systems Performance	FIRES CONTROLLED BY 1 Sprinkler	2 or Less Sprinklers	3 or Less Sprinklers	More Than 3 Sprinklers	Unsatisfactory Sprinkler Performance
Mercantiles	8[illegible]	49	32	81	49	64	73	8	1
Hotels, Motels Multiple Residences	31	25	5	30	22	28	29	1	1
Bowling Lanes	24	22	2	24	21	22	23	1	
Nursing Homes	21	18	3	21	16	20	20	1	
Hospitals	17	13	4	17	11	15	15	2	
Restaurants	9	7	2	9	3	7	7	2	
Assembly and Office Buildings	6	3	3	6	4	4	5	1	
Schools and Colleges	35	29	5	34	24	31	32	3	1
Cumulative Totals in Numbers	225	166	56	222	150	191	204	19	3
Cumulative Totals in Per Cent		74.1%	25.0%	99.1%	66.5%	85.4%	90.6%	8.6%	.9%

1957-1967

An analysis of 225 fires in "completely" sprinklered "life safety" occupancies (light or ordinary hazard).
99.1% of these fires were extinguished or controlled by sprinklers.
The three instances of unsatisfac[illegible]ry performance resulted from "closed" valves.
Simple automatic valve supervision by central station, proprietary or remote station systems would send an automatic trouble signal alerting building employees and/or the fire department that water is "shut-off".

Source: 241 National Automatic Sprinkler and Fire Control Association, Inc.; News Bulletin, p. 18, May-August, 1971

AUTOMATIC SPRINKLER PERFORMANCE IN AUSTRALIA AND NEW ZEALAND

1886-1968

by

Harry W. Marryatt, Chairman, Australian Fire Protection Association

540 pages

Published by

AUSTRALIAN FIRE PROTECTION ASSOCIATION

51-53 William Street, Melbourne, Victoria Australia 3000

April, 1971

We don't very often publish book reviews. But this case is different. We would be remiss in our responsibilities to you — our readers — if we didn't tell you about Harry W. Marryatt's text, a comprehensive and scholarly study of automatic sprinkler performance in Australia and New Zealand, covering a period of 82 years.

Harry Marryatt is the founder of the Australian Fire Protection Association, has been its chairman since it was established in May, 1960. He is a graduate of the University of Melbourne, a charter member of the Society of Fire Protection Engineers (USA) and a Fellow of the Australian Institute of Management. He has been a professional fire protection engineer for more than forty years; has designed, manufactured, installed and serviced automatic sprinkler systems and virtually all fixed fire protection systems in Australia for more than four decades.

The book, inspired by Percy Bugbee, Chief Administrator of the National Fire Protection Association International (retired), is the most incisive, penetrating, detailed and comprehensive text published to date on the historic behavior of automatic sprinkler systems.

The book is more than a statistical analysis of sprinkler performance. It is a fire protection engineer's delight, examining the basic principles of loss control, delving into the basic physical laws governing the capabilities of water to absorb heat when droplets are broken up into a fine spray.

For those of you who relish the physics and chemistry of fire, its calculitic formulae, this book will keep you and your slide rule busy

For those of you who want a reference text with well documented case histories of fires in virtually every conceivable

Source: 242 National Automatic Sprinkler and Fire Control Association, Inc.; News Bulletin, p. 25-28, January-March, 1973

AUTOMATIC SPRINKLER PERFORMANCE TABLES

TABLE 3 — CONDENSED *

Number of Sprinklers Operating	Number of Fires		Percentage Extinguished or Controlled	
	Total	Cumulative	Total	Cumulative
1	3809	3809	66.56%	66.56%
2	901	4710	15.56	82.12
3	337	5047	5.89	88.01
4	184	5231	3.22	91.23
5	91	5322	1.58	92.81
6	71	5393	1.24	94.05
7	50	5443	0.87	94.92
8	45	5488	0.78	95.70
9	25	5513	0.44	96.14
10	31	5544	0.54	96.68
10 or more	176	5720	3.08%	99.76%

TOTAL	NUMBER	PERCENT
Fires Extinguished or Controlled	5720	99.76%
Unsatisfactory Performance	14	00.24%
TOTAL	5734	100.00%

*Source — *Automatic Sprinkler Performance In Australia*, 1886-1969 (p. 84) by — H. W. Marryatt, Australian Fire Protection Association (April, 1971)

Source: 242 National Automatic Sprinkler and Fire Control Association, Inc.; News Bulletin, p. 25-28, January-March, 1973

type of occupancy, this is an indispensable reference source.

If you delight in "the laws of large numbers", statistics, this text is the ultimate source of information about sprinklers, originating from Australia and New Zealand, where statistical research into sprinkler behavior stands out as an example for the world to emulate.

Marryatt has evaluated 5,734 fires, virtually every instance of sprinkler operation of which a known record exists in the nation's down under. His conclusion: 5,720 extinguishments out of a possible 5,734. 99.76% of all recorded fires: successfully extinguished by sprinklers.

Marryatt has wrung every conceivable drop of information out of the statistics he has developed: operating temperatures of sprinklers, types of sprinkler (link and lever, bulb, pendant, upright, etc.), response time of the "fire brigade" (department), time of day at which fires occurred, month of year, construction type (fire resistive — non-fire resistive), floors of buildings in which fires occurred, the height above the floor of sprinklers in operation. He makes extensive

AUSTRALIA - NEW ZEALAND
WHY UNSATISFACTORY PERFORMANCE?

	No. of Fires	Percent of Unsatisfactory Performance
• Severe external exposure	4	28.6%
• Partial sprinkler protection	4	28.6%
• Explosions Systems destroyed by blast	3	21.5%
• Fire loading too high for water supply	1	07.1%
• Inadequate water supplies	1	07.1%
• Roof surface destroyed	1	07.1%
TOTAL	14	100.0%

Source: 242 National Automatic Sprinkler and Fire Control Association, Inc.; News Bulletin, p. 25-28, January-March, 1973

commentaries on water supplies, flowing pressures, gallonage consumed, and a detailed analysis with illustrative case histories on the behavior of fires in nearly one hundred types of occupancies.

His analysis of incendiary fires, even cases where as many as seven fires were set by an arsonist, have given sprinklers a 100% record in controlling 120 out of a possible 120 fires set by arsonists.

Marryatt's five years of research into 5,734 fires discovered only 14 cases where sprinklers failed to extinguish or control fires. That's only 0.24% compared to a record of 99.76% of the total fires successfully managed by sprinklers.

In 82 years, 14 unsuccessful operations is a little short of unbelievable.

The most amazing fact to emerge from the book was the small number of sprinklers needed to control fires. 66.56% of all fires were controlled by one sprinkler. 82.12%, by two or less sprinklers. 91.23%, by four or less sprinklers. Only 176 fires opened more than ten sprinklers out of a possible 5,734. That's 3.08%.

If you really want to know the story on sprinklers, this book is a must.

You can order it directly from the National Fire Protection Association.

60 Batterymarch Street
Boston, Massachusetts 02110
Attention: Doris Sheldon

Enclose a check or money order made payable to NFPA ($15.50).

Source: 242 National Automatic Sprinkler and Fire Control Association, Inc.; News Bulletin, p. 25-28, January-March, 1973

PART III

S T A T I S T I C S

HOW MUCH WATER SHOULD A CITY HAVE AVAILABLE FOR FIGHTING FIRES

1. ISO Guide for Determination of Required Fire Flow

2. Municipal Grading Schedule Description

WATER SUPPLY REQUIREMENTS FOR FIRE PROTECTION

This chapter gives information on the quantities of water needed for fire protection purposes. The components of a water system are discussed in other chapters in this section. No distinction is made for ownership of a system, whether public or private, as quantities of water needed for fire protection are not based on ownership of the system but rather on experience and engineering analysis of fire protection requirements for the property to be protected. Supply requirements for automatic sprinklers or other fixed systems using water are discussed in appropriate chapters of Sections 14 and 15.

A. The Two Uses of Water Systems

Water systems designed today for municipal use have dual functions; they supply potable water for domestic consumption, and they supply water for fire protection. Domestic consumption means more than just water for human consumption. It includes water used for sanitation, industrial processes, lawn sprinkling, air conditioning and similar water-consuming purposes. Sometimes industrial sites will provide separate systems for supplying process water and water for fire protection. Any dual-purpose system must be able to supply enough water for fire protection while at the same time meet the maximum anticipated consumption for other purposes.

B. Rates of Consumption

There are three rates of consumption that are considered in designing water systems. They establish a base to which required fire flows can be added in designing a system or determining its adequacy. The rates are:

1. Average daily consumption—the average of the total amount of water used each day during a 1-year period.
2. Maximum daily consumption—the maximum total amount of water used during any 24-hour period in a 3-year period. (Unusual situations which may have caused an excessive use of water, such as refilling a reservoir after cleaning should not be considered in determining the maximum daily consumption.)
3. Peak hourly consumption—the maximum amount of water that can be expected to be used in any given hour of a day.

The maximum daily consumption is normally about 1.5 times the average daily consumption. The peak hourly rate will vary from two to four times a normal hourly rate. The effect these varying consumption rates will have on the ability of the system to deliver required fire flows will vary with the system design. But both maximum daily consumption and peak hourly consumption should be considered to ensure that water supplies and pressures do not reach dangerously low levels during these periods, and that adequate water will be available in the event of a fire.

C. Water for Fire Fighting

Historically, water systems for cities and towns were developed with needs other than fire protection in mind. However, it was found that in a large city which had to have a lot of water for drinking, sanitation, and other purposes, there was usually sufficient water to provide a useful supply for fire fighting purposes. On the other hand, waterworks designed on the basis of ordinary water needs of a small city would be able to deliver only a fraction of the water which might be needed for fire fighting.

All this led to inquiries into the cost in a given city for a waterworks that could provide water for fire fighting purposes as well as for other uses. A number of distinguished engineers associated with individual waterworks examined the problem and their findings were discussed in technical papers presented at engineering society meetings. Papers by J. Herbert Shedd (1889),[1] J. T. Fanning (1892),[2] and Emil Kuichling (1897)[3] should be consulted for details of the discussions in which standards now followed in American and Canadian waterworks practice developed (Table 11-1A).

Table 11-1A. Estimates of Fire Flow

	Number of Fire Streams Required Simultaneously				
Populations Thousands	Shedd 1889	Fanning 1892	Freeman 1892	Kuichling 1897	NBFU 1910
1			2–3	3	4
4		7		6	8
5	5		4–8	6	9
10	7	10	6–12	9	12
20	10		8–15	12	17
40	14		12–18	18	24
50		14		20	26
60	17		15–22	22	28
100	22	18	20–30	28	36
150		25		34	44
180	30			38	48
200			30–50	40	48

Sources (these authorities define streams slightly differently as described in accompanying text, but the streams were of the order of 200 gpm to 300 gpm):

Shedd, J. Herbert, discussion on a paper by Sherman, William B., *Ratio of Pumping Capacity to Maximum Consumption.*[1]

Fanning, J. T., *Distribution Mains and the Fire Service.*[2]

Kuichling, E., *The Financial Management of Water Works.*[3]

Freeman, John R., *The Arrangement of Hydrants and Water Pipes for the Protection of a City Against Fire.*[4]

Figures furnished by National Board of Fire Underwriters, and presented in a paper by Metcalf, Leonard, et al.[5]

The Number of Hose Streams

The starting point for considering the cost of water for fire protection was an estimate of the number of hose streams that a fire department might need for fire fighting. This was usually estimated on the basis of the central portion of the city where the largest buildings were located and where there was the greatest building congestion. The number of streams was found to be related, in a very rough way, to the population. Shedd's proposal, the first, was on the basis of hose streams discharging 200 gpm. He suggested that a community of 5,000 population, as a rule, would need about five such streams and that the needs of

Source: National Fire Protection Association; Fire Protection Handbook, pp. 11-2 through 11-6 14th edition 1976

other cities could be graduated up to thirty streams in a city of 180,000. Fanning proposed streams requiring about 54 psi pressure as the basis. His figures were of the same general order as Shedd's, beginning at seven streams for a community of 4,000 and going up to twenty-five streams for a city of 150,000.

Kuichling suggested a formula where the number of streams required would be the square root of the population in thousands multiplied by a factor of 2.8. There were arithmetical differences as to how these estimates worked out for individual cities, but they were of the same general order (Table 11-1A). Most important, they did provide a basis from which the waterworks designers could make some estimates of the cost factors which fire demands imposed on various details of the system.

During this period of consideration of waterworks design features to provide fire protection, the most important paper on the subject, *The Arrangement of Hydrants and Water Pipes for the Protection of a City Against Fire*, was presented (1892) by John R. Freeman.[4] He had done the fundamental work on flow of water through hose and nozzles, so he was able to pin down the definition of a standard fire stream to one with a discharge of 250 gpm at 40 to 50 psi pressure. He said that the relationships suggested by Shedd and Fanning between population and the number of streams required were of the right order, but he did not think the needs of individual cities could be quite so definitely pinned down. He suggested two to three streams as a minimum at 1,000 population graduated up to thirty to fifty at 200,000 (Table 11-1A). Most significantly, he warned: "Ten streams, or as large a proportion thereof as the financial consideration will permit, may be recommended for a compact group of large, valuable buildings, irrespective of a small population."

Engineering: Distributing Network, Hydrant Spacing, Storage

Freeman noted a fundamental difference in purpose between a system designed for supplying ordinary water needs and one for water for fire protection. Fire draft required concentration of the water, whereas domestic draft was a matter of distribution.

Freeman sought to secure recognition of the fact that if a water system was to supply fire protection needs, the distribution system should be designed to concentrate the needed amounts of water. Small pipes were sufficient for distribution, but larger ones were needed for concentration of supply to fire streams. He suggested 6-in. diameter pipe as the minimum for residential districts, and he noted that 8-in. pipe was adequate only where it formed part of a network of distributing pipes whose intersections were not far apart.

Another important point Freeman made was that hydrants should be placed where they could concentrate streams at specific blocks or groups of buildings to be protected rather than on an arbitrary basis of a certain number of feet apart on the street mains. His work on hose streams had shown how long hose lines reduced the water that can be delivered promptly on a fire. He therefore suggested a working rule for hydrant spacing of 250 ft between hydrants in compact mercantile and manufacturing districts, and 400 to 500 ft in residential districts. These working rules can still be used as guides for good design. (Hydrant spacing is discussed in greater detail in Chapter 2 of this Section.)

Freeman further insisted that fire supply should be in addition to maximum domestic consumption and laid the foundation for eventual recognition of this principle. He also indicated how much water should be stored in standpipes or elevated reservoirs in the application of the principle. He expressed the judgment that flow for all of the hose streams required should be supplied from a reliable source, such as an elevated storage reservoir, for a period of not less than 6 hrs during a period when the system was also furnishing maximum demands for domestic and other uses. His judgment also was that to supply the combined fire and domestic needs in a system provided with reliable pump capacity, a 1-hr supply in a standpipe or elevated reservoir would be acceptable.

The Insurance Grading Schedule

As early as 1889, the NBFU (National Board of Fire Underwriters) began to make fire protection surveys of municipalities. This work was intensified in 1904 after a conflagration in Baltimore. Today the larger cities countrywide and the smaller communities in all but seven states are surveyed by the ISO (Insurance Services Office), successor to the NBFU. The survey includes an evaluation of a municipality's water system in all its details, and a map is usually prepared of the system itself. Actual hydraulic tests are made to determine the fire flow available in various parts of the community.

From the examination of the water supply, as well as other factors affecting fire defenses, the community is provided with recommendations expressing an engineering judgment on what the community should consider in its decisions on its public fire protection program. Engineers use as a yardstick the latest edition of ISO's *Grading Schedule for Municipal Fire Protection*,[6] that considers a municipality as a whole, and no longer places more emphasis on protection for downtown districts than on other important districts as did earlier editions of the grading schedule. (For a more complete discussion of the insurance grading schedule see ~~Section 9, Chapter 6~~ III-18 — III-21).

D. Fire Protection Requirements in Water Systems

The capacity of a water system is determined by the total amount of water it must furnish. This is the sum of: (1) water required for domestic or industrial uses, and (2) water required for fire service. In small towns, the requirements for fire protection exceed other requirements.

In North American cities, a public water system is expected to furnish water for a great variety of purposes. In individual cities, there may be a heavy industrial demand, but demands for air conditioning and lawn sprinkling are examples of regular uses which can also affect the required capacity of the system. The adequacy of a public water system for fire protection cannot be taken for granted. These other demands on the system must be determined to estimate their effects on the capacity of the system for fire protection.

A joint report (1951) of committees of the American Society of Civil Engineers, the American Water Works Association and others,[7] suggested that the maximum general service demand on a waterworks system be taken as the peak hourly demand during a test year. This, they noted, was the only figure which can fairly be compared with the maximum fire flow requirement.

Source: National Fire Protection Association; Fire Protection Handbook, pp. 11-2 through 11-6 14th edition 1976

Evaluating System Capacity

ISO engineers evaluate the ability of a water system to meet the maximum daily consumption rate plus the needed fire flow. In most large cities, the peak hourly rate exceeds the maximum daily consumption rate plus fire flow, and therefore, is the controlling factor in system design. However, in the smaller communities the reverse is true with the maximum daily consumption rate plus fire flow being the controlling factors. For many years water consumption has been increasing in most municipalities resulting in increased peak hourly rates. One result of this trend has been an increase in the number of municipalities in which the peak hourly rate controls design.

Pressure Characteristics of Systems

The pressure for which systems are normally designed reflect several practical considerations. They attempt to provide pressures that are adequate for water supplies both for domestic consumption and for fire protection. If either type of service demands special ranges of pressure, they too can be provided. Pipe and related fittings and methods of using them will allow almost any desired range.

San Francisco, for example, has a separate system, designated the "high pressure system," under the control of the fire department. All of the pipe is extra-heavy cast iron, tar-coated and lined, and tested on installation and repair to 450 psi. Two steam-operated pump stations can pump water from San Francisco Bay into the system, and 20,000 gpm at 250 psi can be delivered to most of the principal mercantile district. San Francisco provided this system primarily because an earthquake might put the regular public water system out of service. A number of other cities have provided similar "high pressure" systems.

Modern motorized fire department pumping apparatus make heavy streams and high pressures available from ordinary water systems where adequate volume is provided. Cities that formerly had separate systems of fire mains, operating at so-called high pressures, now generally have these operating at what would be normal public water pressures. They retain the advantages of an extra system of water mains.

Public water systems reflect a compromise on the question of pressures. Pressures in the range of 65 to 75 psi are best in most systems. This range is adequate for ordinary consumption in buildings up to about ten stories. It will provide sufficient water for automatic sprinkler systems in buildings of four to five stories. Where pressures of this order are provided, there is a reasonable margin to make it relatively easy to compensate for local fluctuations in draft at various times.

It is generally recommended that a minimum residual pressure of 20 psi be maintained at hydrants when delivering the required fire flow. Pumpers can be operated where hydrant pressures are less, but with difficulty. Where hydrants are well distributed and of the proper size and type (so that friction losses in the hydrant and suction line may not be excessive), it may be possible to set 10 psi as the minimum pressure. Sufficient suction pressure should be maintained to prevent developing a negative pressure in the street mains, which might result in the collapse of the mains or other water system components, or back-siphonage of polluted water from some interconnected source. The use of residual pressures of less than 20 psi is not permitted by most state health departments.

Pressures in a public water system may be considered excessive as they approach 150 psi. As pressures increase, they tend to cause leaks in domestic plumbing, and special attention is required to restrain the mains in the ground. Pipe and fittings used in the ordinary public water system are designed for maximum working pressures of 150 psi. This does not mean that it is good practice to run pressures up that high. Pressure-reducing valves can be used in some sections of a system where the topography would produce excessive pressures, and individual water services to buildings may require pressure reducing valves to keep the pressure on domestic piping at safe levels.

Systems for Higher Elevations

When water must be supplied to an area of a community on high ground, the usual practice is to provide a separate water distribution system for the elevated section so that a normal range of pressures is provided. In such cases, the elevated area should be provided with its own water storage facility, and pumps may be provided to boost the water from the rest of the system. Likewise, the upper stories of a high building should be provided with water systems in the building itself. These systems will have the same requirements as for an area on a hill. A very tall building would have to be divided into a number of pressure zones. Zones of more than twelve stories tend to get outside the normal pressure ranges. In any case, each pressure zone must have storage of water in amounts needed for the sprinkler service or hose streams to be provided, and a system of pumps so that each zone is supplied from the zone below. Care should be taken to ensure that the pumps will be able to operate even during times of power failures.

E. Calculating Fire Flows

For many years the NBFU formula (see Table 11-1A) was commonly used as a guide in determining the fire flow required in the downtown business districts of municipalities. The formula

$$G = 1020\sqrt{P}\ (1 - 0.01\sqrt{P})$$

gave the fire flow, G, in gallons per minute as a function of the population, P, in thousands.

In making fire protection surveys, the fire flow requirements in the sections of the municipalities outside the downtown business district were estimated by the engineers of the NBFU and insurance bureaus.

As cities became more decentralized, the formula based on population became less reliable as a guide for the fire flow needed in the downtown district. In addition, it became more apparent that a guide to engineering judgment was needed for the other sections of the cities. In 1948, a paper by A. C. Hutson,[8] assistant chief engineer of the NBFU, provided some specific suggestions for estimating fire flow requirements in these sections.

The latest developments in estimating fire flow requirements are found in the *Guide for Determination of Required Fire Flow*[9] published by ISO in 1972. It provides guidance for estimating fire flow requirements in all parts of a municipality. The basic formula in the guide is:

$$F = 18\,C\,(A)^{0.5}$$

where F is the required fire flow in gallons per minute, C is the coefficient related to the type of construction, and A is the total floor area of the building considered.

The values for C are: 1.5 for wood frame construction, 1.0 for ordinary construction, 0.8 for noncombustible con-

Source: National Fire Protection Association; Fire Protection Handbook, pp. 11-2 through 11-6 14th edition 1976

struction, and 0.6 for fire resistive construction. Interpolation is used if the type of construction does not fall into one of the four categories.

To the result obtained by application of the formula, a credit or surcharge is applied for occupancy, a credit for complete automatic sprinkler protection when provided, and a surcharge for exposures.

The maximum fire flow required is 12,000 gpm for any one location. The practical reason for this top figure is that manual fire fighting methods using men with hose streams and heavy stream appliances are not likely to develop a larger supply considering the general arrangement of buildings and the availability of hydrants. However, the possibility of a second simultaneous fire in the largest cities is considered, for which an allowance of 2,000 to 8,000 gpm additional may be made. This sets a practical maximum fire flow demand of 20,000 gpm for any city.

For groupings of one-family and small two-family dwellings not exceeding two stories in height, the short method of determining required fire flow given in Table 11-1B may

Table 11-1B. Fire Flows for Groups of Dwellings

Exposure Distances Feet	Suggested Required Fire Flow* Gallons per minute
Over 100	500
31 to 100	750–1,000
11 to 30	1,000–1,500
10 or less	1,500–2,000†

* Where wood shingles could contribute to spreading fires, add 500 gpm.

† If the buildings are continuous use a minimum of 2,500 gpm.

be used. The required fire flow should be available with consumption at the maximum daily rate (see Part B of this chapter). The number of hours during which the required fire flow should be available varies from 2 to 10 hours as indicated in Table 11-1C.

Table 11-1C. Duration of Required Fire Flow (U.S. Gallons)

Required Fire Flow			Required Fire Flow		
Gallons per minute	Million gallons per day	Duration hours	Gallons per minute	Million gallons per day	Duration hours
1,000	1.44	2	4,500	6.48	4
1,250	1.80	2	5,000	7.20	5
1,500	2.16	2	5,500	7.92	5
1,750	2.52	2	6,000	8.64	6
2,000	2.88	2	7,000	10.08	7
2,250	3.24	2	8,000	11.52	8
2,500	3.60	2	9,000	12.96	9
3,000	4.32	3	10,000	14.40	10
3,500	5.04	3	11,000	15.84	10
4,000	5.76	4	12,000	17.28	10

There are fires where quantities of water in excess of the required fire flow are used. Water supplies of 50,000 gpm or greater have been used in fire suppression, but to design systems capable of delivering flows of that magnitude in the average community for a possible unusual situation is not good economic practice.

F. Adequacy and Reliability of Supply

The adequacy of any given water system can be determined by engineering estimates. The source, including storage facilities in the distribution system, must be sufficient to furnish all the water that combined fire and domestic needs may call for at any one time. Arrangement of the supply works and details of the pumping facilities may limit the adequacy of the supply or affect its reliability. The various components of a water system are discussed in other chapters of this Section.

In a "pumping" system, a common arrangement is to have one set of pumps that takes suction from wells or from a river, lake, or other body of water. If the water does not have to be filtered, the pumps may discharge directly into the distribution system. Where filtration is necessary, the pumps take suction from the primary source and discharge the water into settling reservoirs and filter beds. After processing, the water flows to clear water reservoirs from which a second set of pumps takes suction and discharges the water directly into the water main system. Unfortunately, failure of any part of the equipment may put the supply works out of commission. This is usually taken care of by duplication of units and by arrangement of the plant so as to facilitate repairs

In considering the reliability of the supply works, features taken into account include: minimum yield, frequency and duration of droughts, condition of intakes, earthquakes, floods, forest fires, ice formations, silting up or shifting of river channels, and absence of watchmen where needed or the possibility of physical injury to them. Reliability is also affected by reservoirs out of service for cleaning and interdependence of parts of waterworks. The condition, arrangement, and reliability of individual units of plant equipment, such as pumps, engines, generators, electric motors, fuel supply, electric transmission facilities and similar items are also factors. Pumping stations of combustible construction are subject to destruction by fire unless equipped with automatic sprinklers.

Duplication of pumping units and storage facilities, and arrangement of mains and distributors so that water may be supplied to them from more than one direction, are measures that can assure continuous operation. The importance of duplicate facilities is shown by the frequency of their use.

G. Future Requirements for Determining Fire Flow

The amount of water needed to control and extinguish a fire in a given property cannot be established currently in precise terms. Differences in fire fighting tactics and variations in conditions which may exist at the time of a fire, as compared with the conditions existing when fire flow requirements were established, are variables that cannot be adequately measured at the present time. Better fire experience data basis should make it possible to tailor fire flows more specifically to conditions that might be expected at the time of a fire. Better analysis may indicate a need to increase fire flow beyond what is presently required, or it may result in a water system design based upon a balance between the risk involved and the economics of maintaining the water system.

The Role of Codes and Ordinances

Fire prevention codes can effectively limit hazards and ignition sources within buildings which in turn will not only help to limit the number of fires, but the size of fires through

Source: National Fire Protection Association; Fire Protection Handbook, pp. 11-2 through 11-6 14th edition 1976

the control of combustibles in a fire area. A good building code further reduces the chance for a serious fire by requiring construction materials and building assemblies which will contain a developing fire to a given area. These two factors alone will reduce considerably the amount of water needed for fire fighting. Zoning ordinances that establish distances between properties can be effective in controlling exposure situations.

The Role of Fire Detection and Extinguishing Systems

The increased use of automatic extinguishing systems, whether they use water or some other agent, will affect the quantities of water required. However, until more widespread use is made of early warning systems and automatic extinguishing systems, it will not be possible to equate the effect of these systems to required fire flow. Consideration is now given in the ISO *Guide for Determination of Required Fire Flow* for the presence of automatic sprinklers.

Water supply requirements are just one factor in a complex system that in total determines what the potential for a fire is, how extensive the fire will be, and the measures needed to suppress it. Research will someday equate all these factors and permit establishing fire flows on the basis of sound, thoroughly researched, and documented principles.

SI Units

The following conversion factors are given as a convenience in converting to SI units the English units used in this chapter.

1 ft = .305 m
1 psi = 6894.757 Pa
1 gpm = 3.785 litres/min

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Source: National Fire Protection Association; Fire Protection Handbook, pp. 11-2 through 11-6 14th edition 1976

HOW THE ISO ESTIMATES FIRE-FLOW REQUIREMENTS

Insurance Services Office

Guide for Determination Of Required Fire Flow

1. An estimate of the fire flow required for a given fire area may be determined by the formula:

$$F = 18\ C\ (A)^{0.5}$$

where

F = the required fire flow in gpm

C = coefficient related to the type of construction

C = 1.5 for wood frame construction

= 1.0 for ordinary construction

= 0.8 for noncombustible construction

= 0.6 for fire-resistive construction

Note: For types of construction that do not fall within the categories given, use a coefficient reflecting the differences. Such coefficients shall not be greater than 1.5 nor less than 0.6 and may be determined by interpolation.

A = the total floor area (including all stories, but excluding basements) in the building being considered. For fire-resistive buildings consider the 6 largest successive floor areas if the vertical openings are unprotected; if the vertical openings are properly protected, consider only the 3 largest successive floor areas.

The fire flow as determined by the above shall not exceed 8,000 gpm for wood frame construction

Source: Insurance Services Office, Guide for Determination of Required Fire Flow, New York, June 1972.

8,000 gpm for ordinary construction

6,000 gpm for noncombustible construction

6,000 gpm for fire-resistive construction

except that for a normal 1-story building of any type of construction the fire flow shall not exceed 6,000 gpm.

The fire flow shall not be less than 500 gpm.

For 1-family and small 2-family dwellings not exceeding 2 stories in height see note 10.

2. The value obtained in No. 1 above may be reduced by up to 25% credit for occupancies having a light fire loading or may be increased by up to a 25% surcharge for occupancies have a high fire loading. As a guide for determining low or high fire loadings, lists of light hazard and extra hazard occupancies as given in National Fire Protection Association Standard No. 13 are included in the Appendix.

The fire flow shall not be less than 500 gpm.

3. The value obtained in No. 2 above may be reduced by up to 25% credit for complete automatic sprinkler protection. For building of fire-resistive or noncombustible construction having a light fire loading the reduction may be up to 50%. The percentage reduction that can be made for an automatic sprinkler system will depend upon the extent to which the automatic sprinkler system is

Source: Insurance Services Office, Guide for Determination of Required Fire Flow, New York, June 1972.

judged to reduce the probability of fires spreading within and beyond the fire area. Normally this reduction will not exceed 25 percent.

4. To the value obtained in No. 2 above a surcharge should be added for structures exposed within 150 feet by the fire area under consideration. The degree of this charge shall depend upon the height, area, and construction of the building(s) being exposed, the separation, openings in the exposed buidings(s), the length of exposure, the provision of automatic sprinklers and/or outside sprinklers in the building(s) exposed, the occupancy of the exposed building(s), and the effect of hillside locations on the possible spread of fire.

The charge for any one side generally should not exceed the following limits for the separations shown:

Separation	Charge
0-10 feet	25%
11-30	20
31-60	15
61-100	10
101-150	5

The total percentage surcharge shall be the sum of the charges for all sides, but shall not exceed 75%.

5. The value obtained in No. 2 above is reduced by the

Source: Insurance Services Office, Guide for Determination of Required Fire Flow, New York, June 1972.

credit (if any) determined in No. 3 above and increased by the surcharge (if any) determined in No. 4 above.

The fire flow shall not exceed 12,000 gpm nor be less than 00 gpm.

Note 1: The guide is not expected to necessarily provide an adequate value for lumber yards, petroleum storage, refineries, grain elevators, and large chemical plants but may indicate a minimum value for these hazards.

Note 2: Judgment must be used for business, industrial, and other occupancies not specifically mentioned.

Note 3: Consideration should be given to the configuration of the building(s) being considered and to the fire department accessibility.

Note 4: Wood Frame structures separated by less than 10 feet shall be considered as one fire area.

Note 5: Party Walls: Normally an unpierced party (common) wall may warrant up to a 10% exposure charge.

Note 6: High one-story buildings: When a building is stated as 1 - 2, or more stories, the number of stories to be used in the formula depends upon the use being made of the building. For example consider a 1 - 3-story building. If the building is being used for high-piled stock, or for rack storage, an occupancy surcharge may be warranted. However, if the building is being used for steel fabrication and the extra height is provided only to facilitate movement of objects by a crane, the building would probably be considered as a 1-story building and an occupancy credit may be warranted.

Note 7: If a building is exposed within 150 feet, normally some surcharge for exposure will be made.

Note 8: Where wood shingle roofs could contribute to spreading fires, add 500 gpm.

Note 9: Any noncombustible building is considered to warrant an 0.8 coefficient.

Source: Insurance Services Office, Guide for Determination of Required Fire Flow, New York, June 1972.

Note 10: Dwellings: For groupings of 1-family and small 2-family dwellings not exceeding 2 stories in height, the following short method may be used. (For other residential buildings, the regular method should be used.)

Exposure distances	Suggested required fire flow
Over 100'	500 gpm
31-100'	750-1000
11-30'	1000-1500
10' or less	1500-2000*

*If the buildings are continuous, use a minimum of 2500 gpm.

Also consider Note 8.

Outline of Procedure

A. Determine the type of construction.

B. Determine the ground floor area.

C. Determine the height in stories.

D. Using tables in Appendix, determine required fire flow to the nearest 250 gpm.

E. Determine the credit or surcharge for occupancy and apply to the value obtained in D above. Do not round off the answer.

F. Determine the credit, if any, for automatic sprinkler protection. Do not round off the value.

G. Determine the total surcharge for exposures. Do not round off the value.

H. To the answer obtained in E, subtract the value obtained in F and add the value obtained in G.

Source: Insurance Services Office, Guide for Determination of Required Fire Flow, New York, June 1972.

Round off the final answer to the nearest 250 gpm if less than 2500 gpms and to the nearest 500 gpm if greater than 2500 gpm.

Use of Tables (Steps A, B, C, D)

The tables use the GROUND AREA of the building and the height of the building in stories. Using the table corresponding to the type of construction, look under the number of stories and locate the gound area of the building(s) being considered between two ground areas given in the table. The corresponding fire flow is found in the left column.

EXAMPLES:

a. Given: A 3-story building of ordinary construction of 7300 square feet (ground area). Using the table C = 1.0, in the 3-story column, 7300 square feet falls between 7100 and 8500 square feet and the corresponding fire flow is 2750 gpm.

b. Given: A 3-story building of ordinary construction of 7300 square feet (ground area) communicating to a 5-story building of ordinary construction of 9700 square feet (ground area) for a total ground area of 17,000 square feet. Determine the total floor area which equals 3 (7300) + 5 (9700) = 70,400 square feet. Using the table C = 1.0, under the one story column for 70,400 square feet the corresponding fire flow is 4750 gpm.

c. Given: A 3-story wood frame building of 7300 square feet (ground area) communicating with a 5-story building of ordinary construction of 9700 square feet (ground area) for a total ground area of 17,000 square feet.

   Determine the total floor area for each type of construction and for the fire area which is 3 (7300) = 21,900 square feet of wood frame construction, 5 (9700) =

Source: Insurance Services Office, Guide for Determination of Required Fire Flow, New York, June 1972.