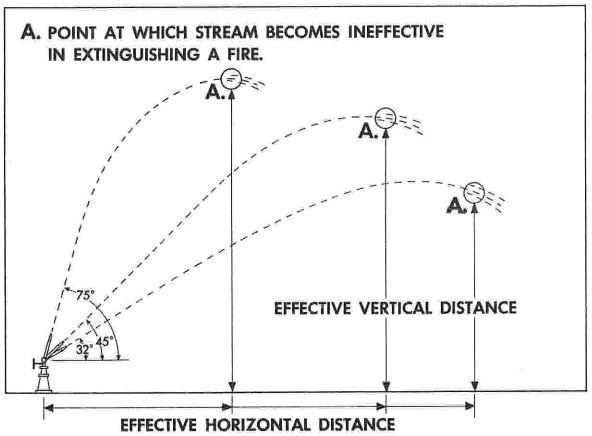
EFFECTIVE REACH OF FIRE STREAMS

The following tabulations of the effective reach of fire streams were obtained from actual tests conducted by the National Board of Fire Underwriters in collaboration with the Chicago Fire Department in 1939 and 1940. The method of making the tests was devised by Clarence Goldsmith, Assistant Chief Engineer of the National Board of Fire Underwriters, now retired. The tests were conducted under weather conditions as good as could be found for out-of-door tests. Adverse winds will considerably reduce the effective range of monitor nozzle streams.

These tabulations are used by special permission granted by the National Board of Fire Underwriters

Elevation of Nozzle	1½" Nozzle			2" Nozzle			2½" Nozzle			3" Nozzle		
	Nozzle Pressure P.S.I.	Distance in Feet		Nozzle Pressure P.S.I.	Distance in Feet		Nozzle Pressure P.S.I.	Distance in Feet		Nozzle Pressure P.S.I.	Distance in Feet	
		Vertical	Horizontal		Vertical	Horizontal		Vertical	Horizontal		Vertical	Horizontal
32°	100	45	130	100	57	172	105	76	185	105	84	195
	140	53	145	140	68	185	150	88	212	155	93	224
	200	68	165	200	86	200	200	96	225	200	98	233
	240	77	175	220	90	212	260	98	242	225	101	260
45°	102	70	105	105	86	147	103	105	159	102	112	176
	150	90	117	148	102	157	150	115	174	150	128	191
	198	104	128	200	113	163	200	127	195	200	136	205
	250	107	140	247	123	178	250	134	210	250	No observation point available	
75°	100	103	30	106	134	55	104	149	50	100	153	57
	153	118	30	153	160	57	152	173	60	150	178	63
	200	130	33	200	171	62	200	192	67	205	201	70
	250	140	35	250	187	65	250	203	69	250	214	75



Fire streams cease to be effective where they lose body, direction or force. Beyond this point the water is in the form of heavy rain and is easily carried away by air currents. *The point of effective reach of the fire streams tabulated above was established as the point where the slugs of water which broke away from the main body of the stream were still closely enough grouped to be effective in extinguishing a fire.* As these slugs became further separated from the stream and broke into spray the stream was considered ineffective.

THEORETICAL DISCHARGE OF NOZZLES

IN U. S. GALLONS PER MINUTE

COEFFICIENT OF DISCHARGE = 1.00

Pressure at Noz. P.S.I.	Head Feet	Velocity Ft. per Sec.	DIAMETER OF NOZZLE IN INCHES																				
			½	⅝	¾	⅞	1	1⅛	1¼	1⅜	1½	1¾	2	2¼	2½	2¾	3	3½	4	4½	5	5½	6
50	115.5	86.3	52.8	85.5	119.	162.	211.	267	330	399	475	647	845	1070	1320	1595	1900	2590	3375	4275	5280	6380	7600
60	138.6	94.5	57.8	90.4	130.	177.	231.	293	362	438	521	708	926	1172	1447	1748	2085	2835	3700	4685	5790	6980	8330
70	161.7	102.1	62.5	97.9	141.	191.	250.	317	391	473	563	765	1001	1267	1565	1888	2250	3065	4000	5060	6350	7560	9000
80	184.8	109.1	66.8	104.	150.	205.	267.	338	418	505	602	818	1070	1354	1672	2020	2405	3280	4270	5410	6690	8080	9630
90	207.9	115.8	70.8	111.	160.	217.	284.	359	443	536	638	868	1136	1436	1773	2140	2550	3475	4530	5740	7090	8560	10210
100	230.9	122.0	74.7	117.	168.	229.	299.	378	467	565	672	915	1196	1512	1870	2255	2690	3660	4775	6050	7470	9030	10770
110	254.0	128.0	78.4	122.	176.	240.	314.	397	490	593	705	960	1255	1588	1961	2366	2820	3840	5010	6340	7840	9470	11300
120	277.1	133.7	81.8	128.	184.	251.	327.	414	512	619	736	1002	1310	1659	2050	2470	2945	4015	5225	6630	8180	9900	11800
130	300.2	139.1	85.2	133.	192.	261.	341.	432	533	645	767	1043	1365	1726	2132	2575	3070	4175	5450	6900	8530	10300	12290
140	323.3	144.3	88.4	138.	199.	271.	354.	448	553	668	795	1082	1415	1790	2212	2670	3180	4330	5650	7160	8850	10690	12730
150	346.4	149.5	91.5	143.	206.	280.	366.	463	572	692	824	1120	1466	1853	2290	2760	3295	4485	5850	7410	9150	11070	13200
175	404.1	161.4	98.8	154.	222.	302.	395.	500	618	747	890	1210	1582	2000	2473	2985	3560	4840	6310	8000	9890	11940	14250
200	461.9	172.6	106.0	165.	238.	323.	423.	535	660	799	950	1294	1691	2140	2645	3190	3800	5175	6760	8550	10580	12770	15220
250	577.4	193.0	118.0	185.	266.	362.	473.	598	739	894	1063	1447	1891	2392	2955	3570	4250	5795	7550	9570	11820	14290	17020
300	692.8	211.2	129.0	202.	291.	396.	517.	655	808	977	1163	1582	2070	2615	3235	3900	4650	6330	8260	10480	12940	15620	18610