REGULATION II

CONTROL OF AIR POLLUTION FROM SULFUR COMPOUNDS

Rule 201. Control of Sulfur Dioxide.

201.1 No person may cause, suffer, allow, or permit emissions of sulfur dioxide from any sulfuric acid plant burning elemental sulfur to exceed the allowable rates specified in Table 4 and/or Curve A of Figure 4.

201.11 If a source has an effective stack height less than the standard effective stack height as determined from Table 5 and/or Curve A of Figure 5, the allowable emission rates must be reduced by multiplying it by

$$\left(\frac{\text{Effective Stack Height}}{\text{Standard Effective Stack Height}}\right)^2$$

201.12 Effective stack height shall be calculated by the following equation:

$$h_e = h + 0.083 v_e D_e \left[1.5 + 0.82 \left(\frac{T_e - 550}{T_e}\right) D_e\right]$$

Where:
h_e = Effective stack height in feet (ft)
h = Physical stack height above ground level in feet (ft)
v_e = Stack exit velocity in feet per second (ft/sec)
D_e = Stack exit inside diameter in feet (ft)
T_e = Stack exit temperature in degrees Rankin (^{o}R)

201.2 No person may cause, suffer, allow, or permit emissions of sulfur dioxide from any sulfuric acid plant to exceed the allowable rates specified in Table 6 and/or Curve B of Figure 4.

201.21 If a source has an effective stack height less than the standard effective stack height as determined from Table 7 and/or Curve B of Figure 5, the allowable emission rates must be reduced by multiplying it by

$$\left(\frac{\text{Effective Stack Height}}{\text{Standard Effective Stack Height}}\right)^2$$

201.22 Effective stack height shall be calculated by the equation in Rule 201.12.

201.3 No person may cause, suffer, allow, or permit emissions of sulfur dioxide from any sulfur recovery plant to exceed the allowable rates specified in Table 8 and/or Curve C of Figure 4.

201.31 If a source has an effective stack height less than the standard effective stack height as determined from Table 9 and/or Curve D of Figure 5, the allowable emission rates must be reduced by multiplying it by:

$$\left(\frac{\text{Effective Stack Height}}{\text{Standard Effective Stack Height}}\right)^2$$

201.32 Effective stack height shall be calculated by the equation in Rule 201.12.

201.4 No person may cause, suffer, allow, or permit emissions of sulfur dioxide from nonferrous smelters to exceed 0.8% by volume of the total flue gas.

201.41 If a source has an effective stack height less than the standard effective stack height as determined from Table 10 and/or Curve C of Figure 5, the allowable emission rates must be reduced by multiplying it by:

$$\left(\frac{\text{Effective Stack Height}}{\text{Standard Effective Stack Height}}\right)^2$$

201.42 Effective stack height shall be calculated by the equation in Rule 201.12.

201.5 No person may cause, suffer, allow, or permit emissions of sulfur dioxide from any solid fossil fuel fired steam generator to exceed 3.0 lb. per million B.T.U. heat input. New proven technology must be applied in removing sulfur dioxide from the emission from solid fossil fuel fired steam generators when it becomes available.

201.6 No person may cause, suffer, allow, or permit emissions of sulfur dioxide from any liquid fuel fired steam generator, furnace, or heater to exceed 440 ppm, by volume.

201.61 If a source has an effective stack height less than the standard effective stack height as determined from Table 11 and/or Figure 6, the allowable emission concentration must be reduced by multiplying it by:

$$\left(\frac{\text{Effective Stack Height}}{\text{Standard Effective Stack Height}}\right)^2$$

201.62 Effective stack height shall be calculated by the equation in Rule 201.12.

201.7 No person in Galveston or Harris Counties may cause, suffer, allow, or permit emissions of sulfur dioxide from a source or sources operated on a property or multiple sources operated on contiguous properties to exceed a net ground level concentration of 0.28 ppm averaged over any 30-minute period.

201.8 No person in Jefferson or Orange Counties may cause, suffer, allow, or permit emissions of sulfur dioxide from a source or sources operated on a property or multiple sources operated on contiguous properties to exceed a net ground level concentration of 0.32 ppm averaged over any 30-minute period.

201.9 No person may cause, suffer, allow, or permit emissions of sulfur dioxide from a source or sources operated on a property or multiple sources operated on contiguous properties to exceed a net ground level concentration of 0.4 ppm averaged over any 30-minute period.

201.10 Emission rates of sulfur dioxide from sources not regulated by Rules 201.1, 201.2, 201.3, 201.4, 201.5, and 201.6 may be set by the Executive Secretary as necessary to attain ambient air quality standards.

Rule 202. Persons affected by this regulation shall be in compliance with the provisions contained herein no later than December 31, 1973. Not later than six months after the effective date of this regulation, any person affected by this regulation shall submit to the Texas Air Control Board a written report on his compliance status, including but not limited to, the minimum time required to design, procure, install and test abatement equipment or procedures. Progress reports shall be submitted to the Board every four months commencing in August of 1972 until compliance is achieved.

All persons shall continue to be governed by the provisions of Regulation III which became effective on February 22, 1968, until December 31, 1973, at which time this regulation shall supersede the previous Regulation III.

Date Adopted: January 26, 1972

Date Filed with Secretary of State: February 4, 1972

Date Effective: March 5, 1972

TABLE 4

SULFURIC ACID PLANTS BURNING ELEMENTAL SULFUR
ALLOWABLE SULFUR DIOXIDE EMISSION RATES
FOR SPECIFIC FLOW RATES

EFFLUENT FLOW RATE	RATE OF EMISSION
scfm	lb/hr
1,000	19.8
2,000	39.6
4,000	79.2
6,000	119.0
8,000	158.0
10,000	198.0
20,000	396.0
40,000	792.0
60,000	1190.0
80,000	1580.0
100,000	1983.0

Interpolation and extrapolation of the data in this Table shall be accomplished by the use of the equation $E = 0.0198\ q$, where E is the allowable emission rate in lb/hr and q is the stack effluent flow rate in scfm.

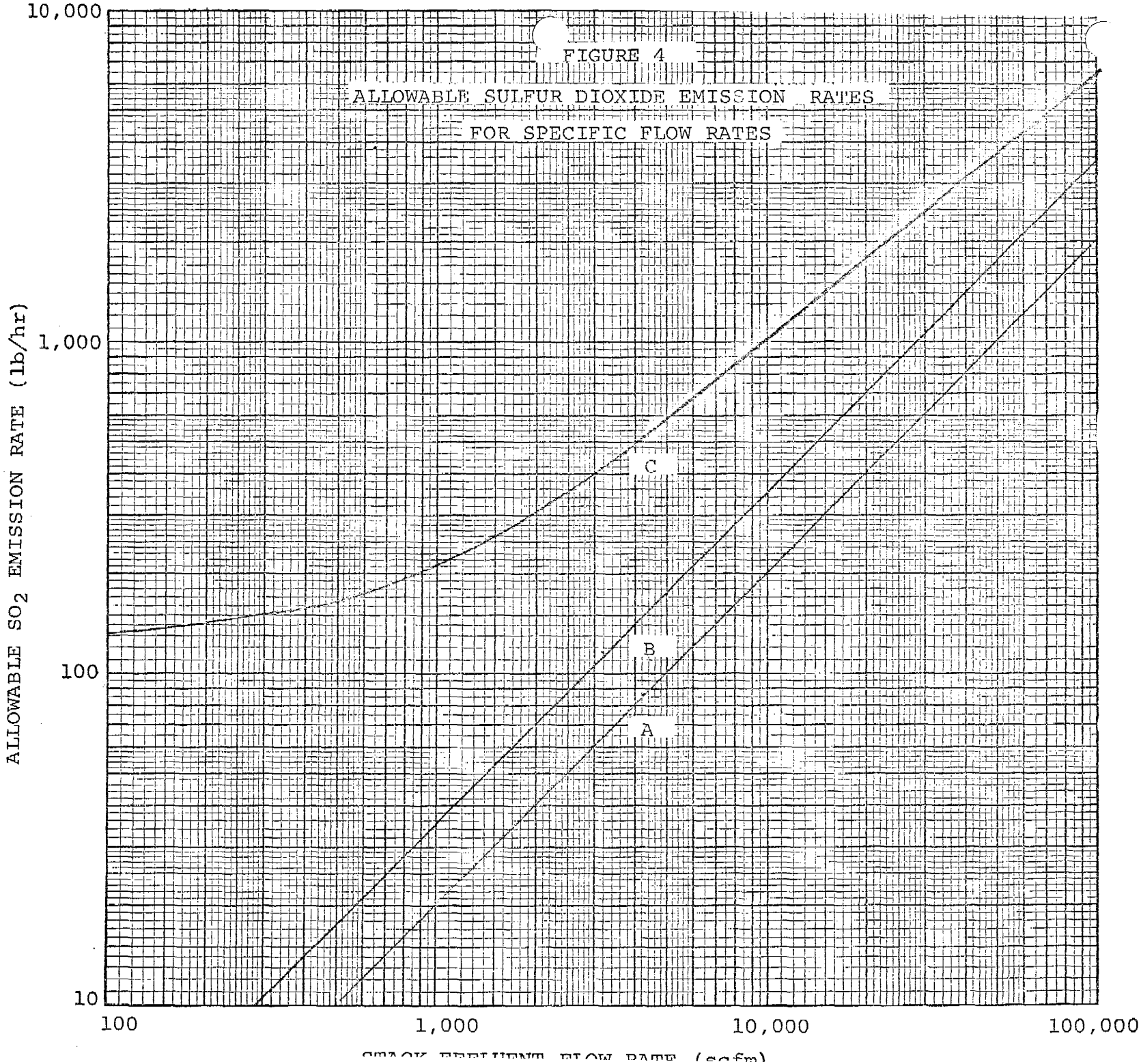


FIGURE 4
ALLOWABLE SULFUR DIOXIDE EMISSION RATES
FOR SPECIFIC FLOW RATES
ALLOWABLE SO_2 EMISSION RATE (lb/hr)
10,000
1,000
100
10
100
1,000
10,000
100,000
C
B
A

TABLE 5

SULFURIC ACID PLANTS BURNING ELEMENTAL SULFUR
STANDARD EFFECTIVE STACK HEIGHT
BASED ON SPECIFIC FLOW RATES

EFFLUENT FLOW RATE	STANDARD EFFECTIVE STACK HEIGHT
scfm	ft
1,000	28
2,000	40
4,000	56
6,000	69
8,000	79
10,000	89
20,000	125
40,000	177
60,000	217
80,000	250
100,000	280

Interpolation and extrapolation of the data in this Table shall be accomplished by the use of the equation $H_e = 0.885\ q^{0.5}$, where H_e is the standard effective stack height in ft. and q is the effluent flow rate in scfm.

FIGURE 5

STANDARD EFFECTIVE STACK HEIGHT
BASED ON SPECIFIC FLOW RATES

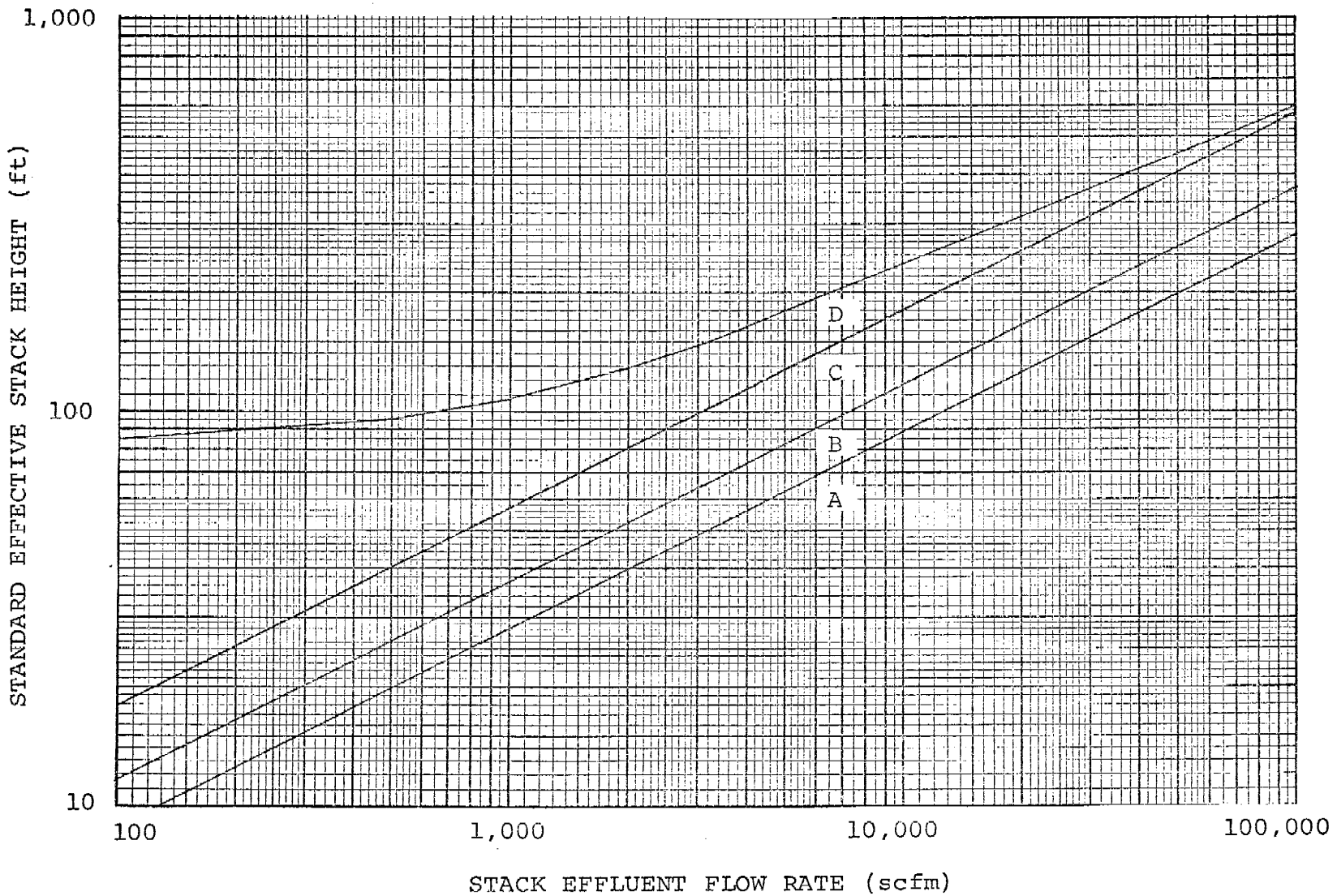


TABLE 6

SULFURIC ACID PLANTS BURNING OTHER THAN ELEMENTAL SULFUR
ALLOWABLE SULFUR DIOXIDE EMISSION RATES
FOR SPECIFIC FLOW RATES

EFFLUENT FLOW RATE	RATE OF EMISSION
scfm	lb/hr
1,000	34.7
2,000	69.4
4,000	138.8
6,000	208.2
8,000	277.6
10,000	347.0
20,000	694.0
40,000	1388.0
60,000	2082.0
80,000	2776.0
100,000	3470.0

Interpolation and extrapolation of the data in this Table shall be accomplished by the use of the equation $E = 0.0347\ q$, where E is the allowable emission rate in lb/hr and q is the stack effluent flow rate in scfm.

TABLE 7

SULFURIC ACID PLANTS BURNING OTHER THAN ELEMENTAL SULFUR
STANDARD EFFECTIVE STACK HEIGHT
BASED ON SPECIFIC FLOW RATES

EFFLUENT FLOW RATE scfm	STANDARD EFFECTIVE STACK HEIGHT ft
1,000	37
2,000	52
4,000	74
6,000	91
8,000	105
10,000	117
20,000	165
40,000	234
60,000	287
80,000	331
100,000	370

Interpolation and extrapolation of the data in this Table shall be accomplished by the use of the equation $H_e = 1.17\ q^{0.5}$, where H_e is the standard effective stack height in ft. and q is the stack effluent flow rate in scfm.

TABLE 8

SULFUR RECOVERY PLANTS

ALLOWABLE SULFUR DIOXIDE EMISSION RATES FOR SPECIFIC FLOW RATES

EFFLUENT FLOW RATE scfm	RATE OF EMISSION lb/hr
1,000	214
2,000	305
3,000	396
4,000	487
5,000	579
6,000	670
7,000	759
8,000	845
9,000	929
10,000	1012
20,000	1766
30,000	2447
40,000	3084
50,000	3690

Interpolation and extrapolation of the data in this Table for stack effluent flow rates less than or equal to 4,000 scfm shall be accomplished by the use of the equation $E = 123.4 + 0.091\ q$, where E is the allowable emission rate in lb/hr and q is the stack effluent flow rate in scfm. Interpolation and extrapolation of the data for stack effluent flow rates in excess of 4,000 scfm shall be accomplished by the use of the equation $E = 0.614\ q^{0.8042}$.

TABLE 9

SULFUR RECOVERY PLANTS

STANDARD EFFECTIVE STACK HEIGHT
BASED ON SPECIFIC FLOW RATES

EFFLUENT FLOW RATE	STANDARD EFFECTIVE STACK HEIGHT
scfm	ft
100	85
500	96
1,000	109
2,000	129
3,000	148
4,000	164
5,000	178
6,000	192
7,000	204
8,000	215
9,000	226
10,000	236
20,000	311
30,000	366
40,000	411
50,000	450
60,000	484
80,000	544
100,000	595

Interpolation and extrapolation of the data for stack effluent flow rates less than or equal to 4,000 scfm shall be accomplished by the use of the equation $H_e = 7.4 \left[123.4 + 0.091\ q\right]^{0.5}$, where H_e is the standard effective stack height in feet and q is the stack effluent flow rate in scfm. Interpolation and extrapolation of the data for stack effluent in excess of 4,000 scfm shall be accomplished by the use of the equation $H_e = 5.8q^{0.402}$

TABLE 10

NON FERROUS SMELTERS

STANDARD EFFECTIVE STACK HEIGHT
BASED ON SPECIFIC FLOW RATES

EFFLUENT FLOW RATE	STANDARD EFFECTIVE STACK HEIGHT
scfm	ft
1,000	57
2,000	80
3,000	99
4,000	114
5,000	127
6,000	139
7,000	151
8,000	161
9,000	171
10,000	180
20,000	255
30,000	312
40,000	360
50,000	402

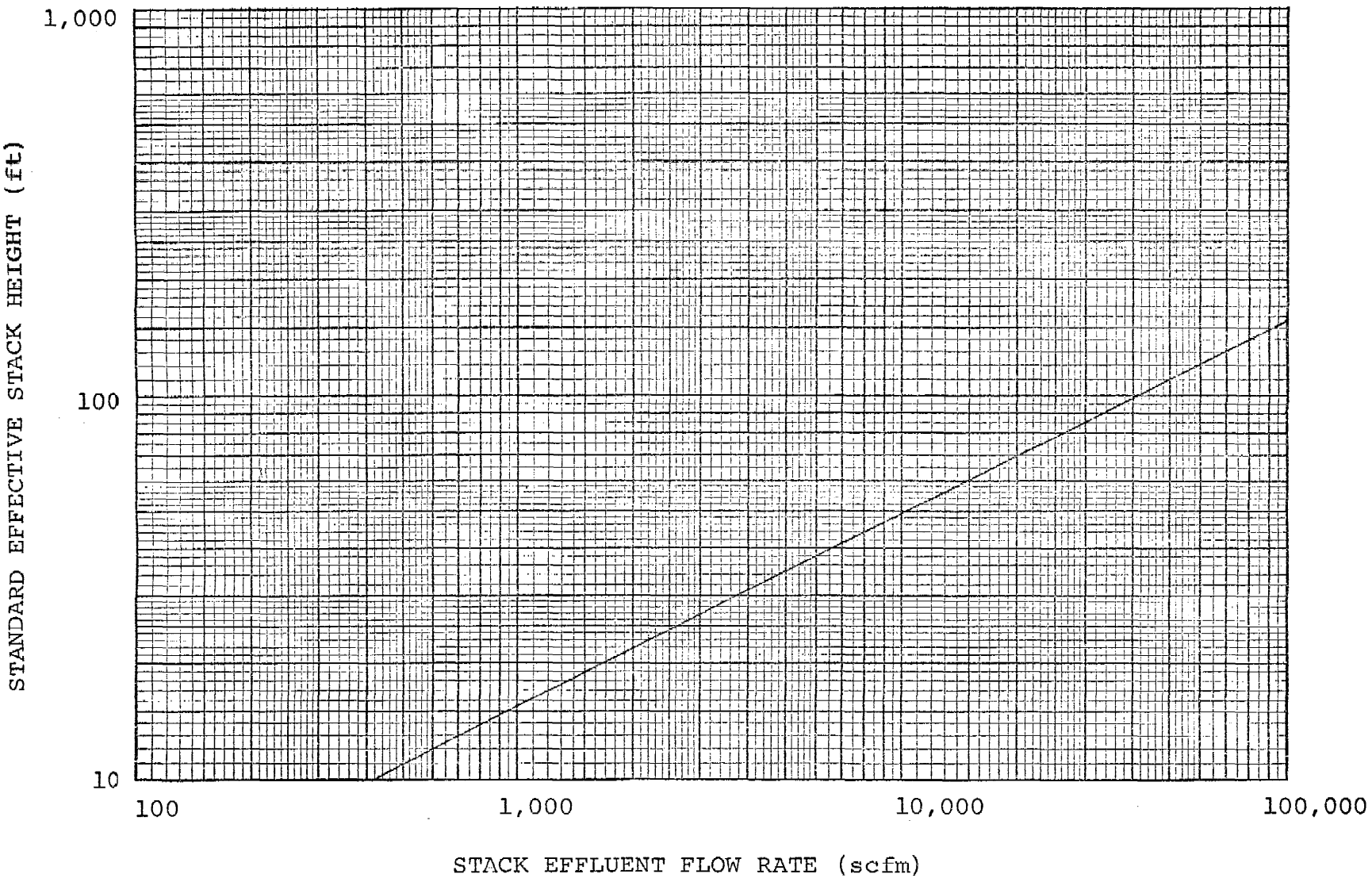
Interpolation and extrapolation of the data in this Table shall be accomplished by the use of the equation $H_e = 1.8\ q^{0.5}$, where H_e is the standard effective stack height in ft. and q is the stack effluent flow rate in scfm.

TABLE 11

STEAM GENERATORS, BOILERS AND HEATERS BURNING LIQUID FUEL STANDARD EFFECTIVE STACK HEIGHT BASED ON SPECIFIC FLOW RATE

EFFLUENT FLOW RATE	STANDARD EFFECTIVE STACK HEIGHT
scfm	ft.
1,000	15
2,000	22
4,000	31
6,000	38
8,000	44
10,000	49
20,000	69
40,000	98
60,000	120
80,000	138
100,000	155

Interpolation and extrapolation of the data in this Table shall be accomplished by the use of the equation $H_e = 0.49\ q^{0.50}$, where H_e is the standard effective stack height in feet and q is the stack effluent flow rate in scfm.

FIGURE 6

STANDARD EFFECTIVE STACK HEIGHT
BASED ON SPECIFIC FLOW RATES