A COMBUSTION HANDBOOK FOR CANADIAN FUELS

VOLUME 3. COAL. PART 2

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CANADIAN COMBUSTION
RESEARCH LABORATORY

MINES BRANCH MONOGRAPH 882

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New Brunswick Coals

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Saskatchewan Coals

Alberta and British Columbia Coals

PART 2

COAL US K-1, ELKHORN No. 3

Typical Moisture Range: 0–6%

Proximate Analysis (lb/lb dry coal)

Ash	0.040
Volatile Matter	0.413
Fixed Carbon	0.547
Total	1.000

Ultimate Analysis (lb/lb dry coal)

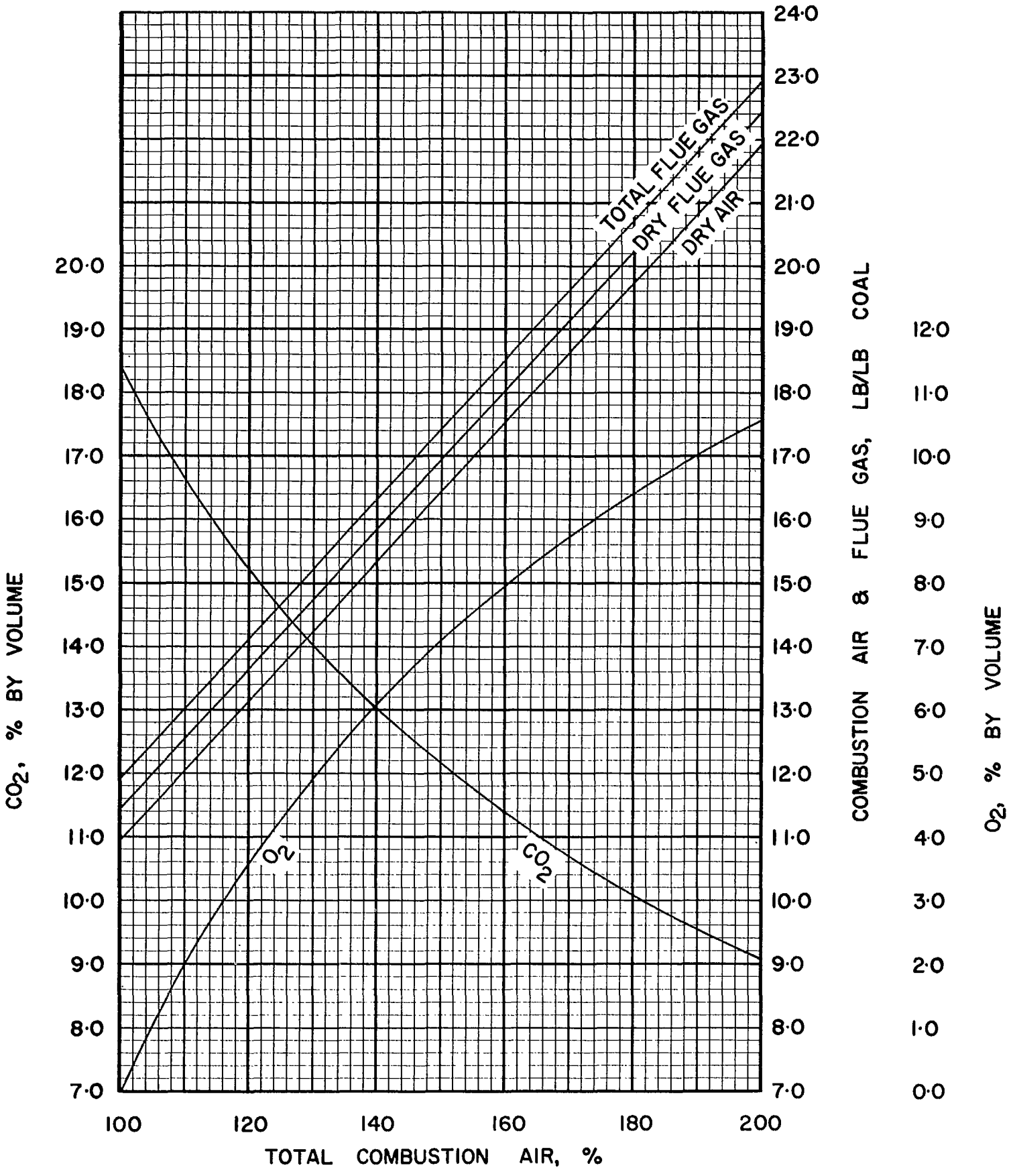
Carbon (C)	0.817
Hydrogen (H)	0.052
Sulphur (S)	0.013
Nitrogen (N)	0.016
Oxygen (O)	0.062
Ash	0.040
Total	1.000

Gross Calorific Value

Btu/lb:	14580
Btu/short ton:	29.16×10^6
Btu/long ton:	32.66×10^6
MJ/kg:	33.91

Conversion Factors

1 short ton = 0.8929 long tons = 2000 lb
10^6 Btu = 68.59 lb
10^6 Btu = 0.03429 short tons
10^6 Btu = 0.03062 long tons



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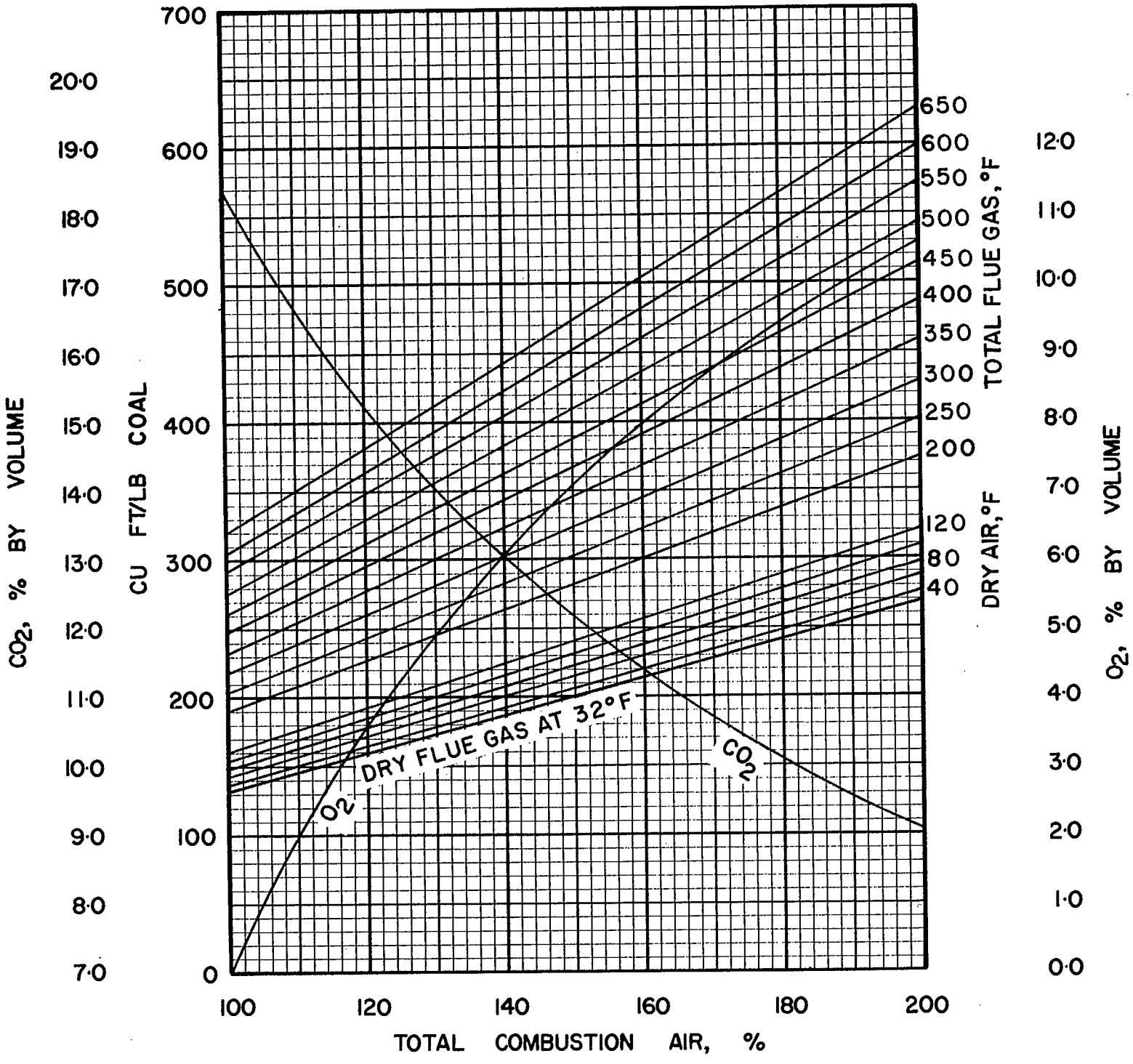

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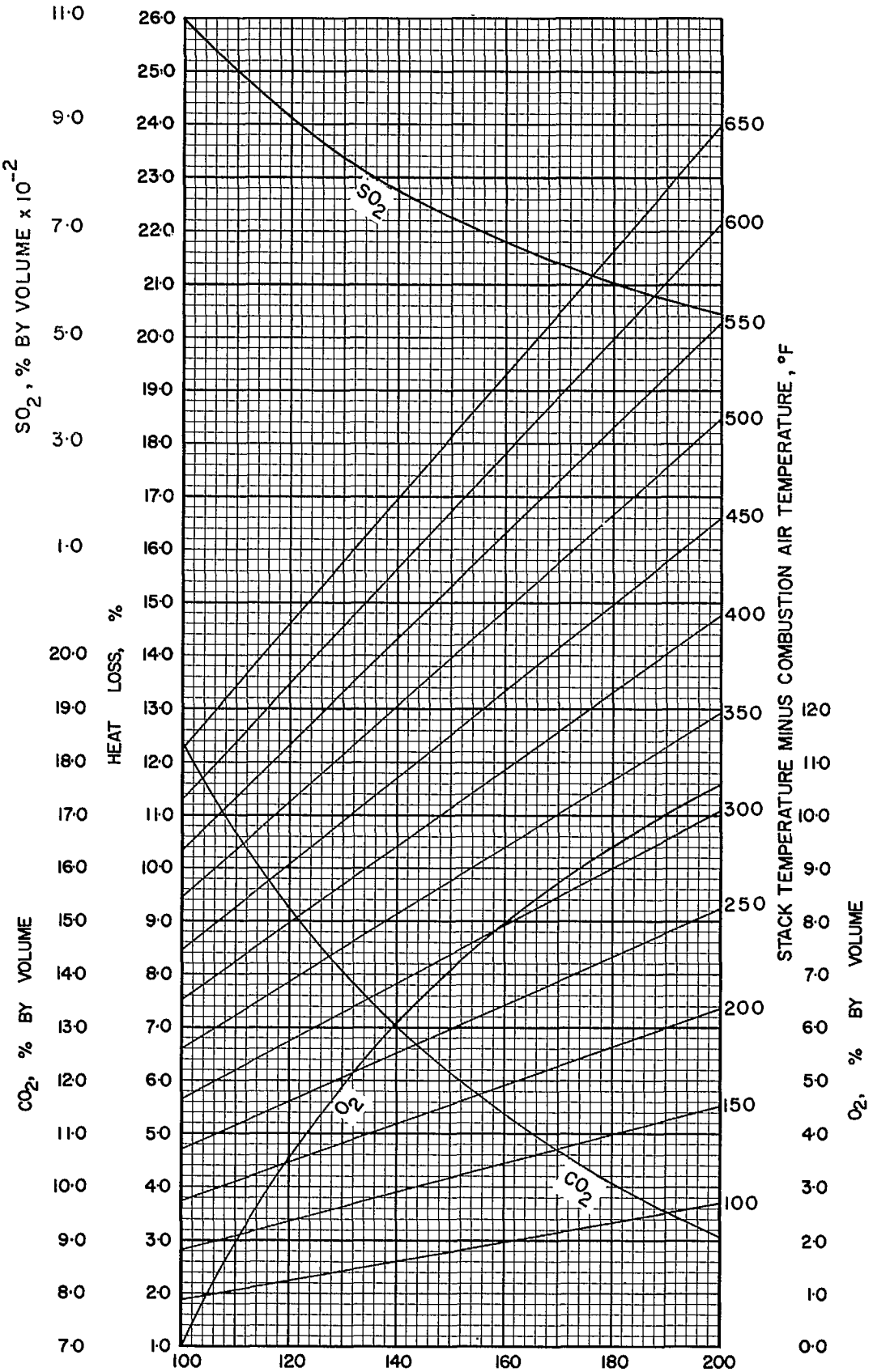

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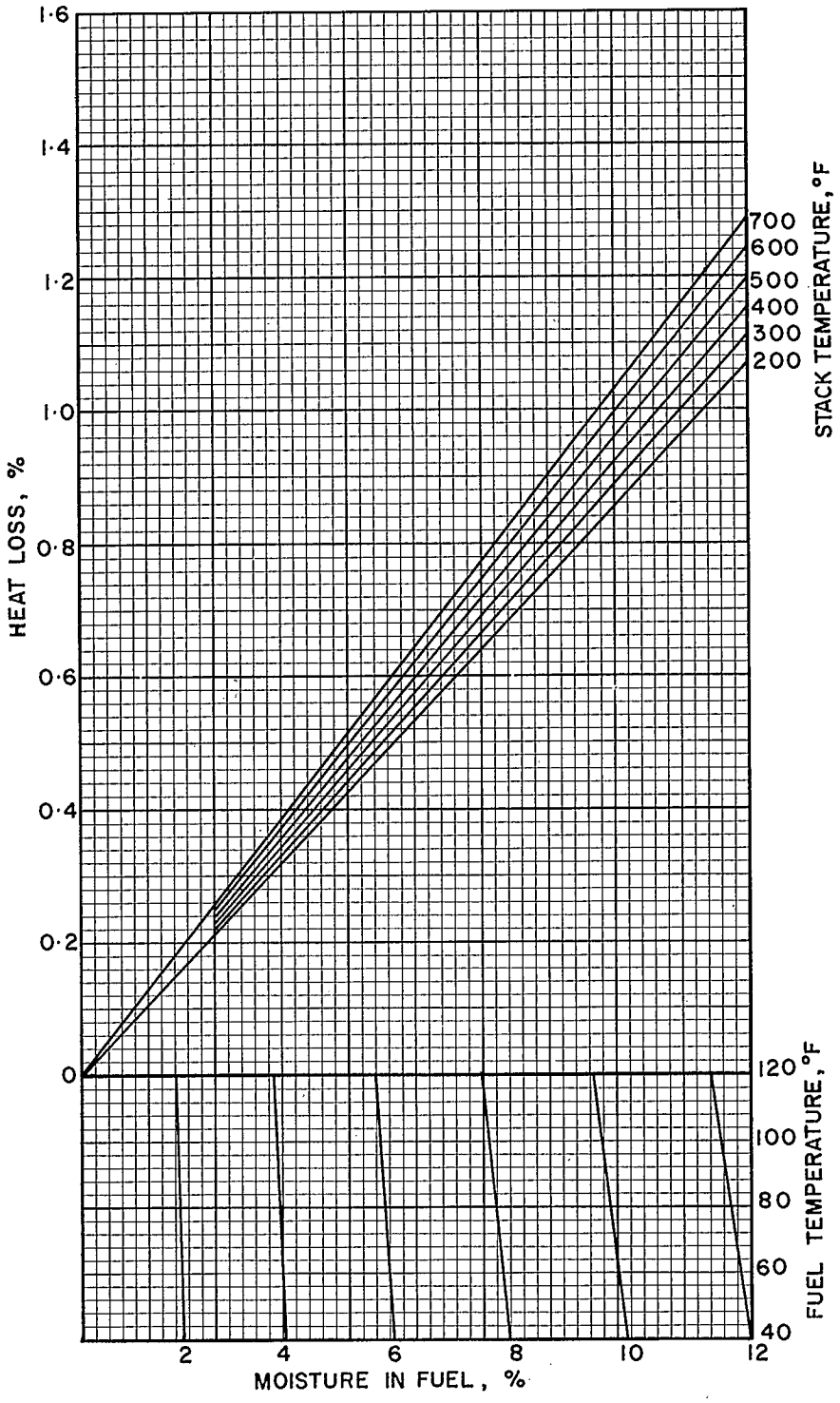

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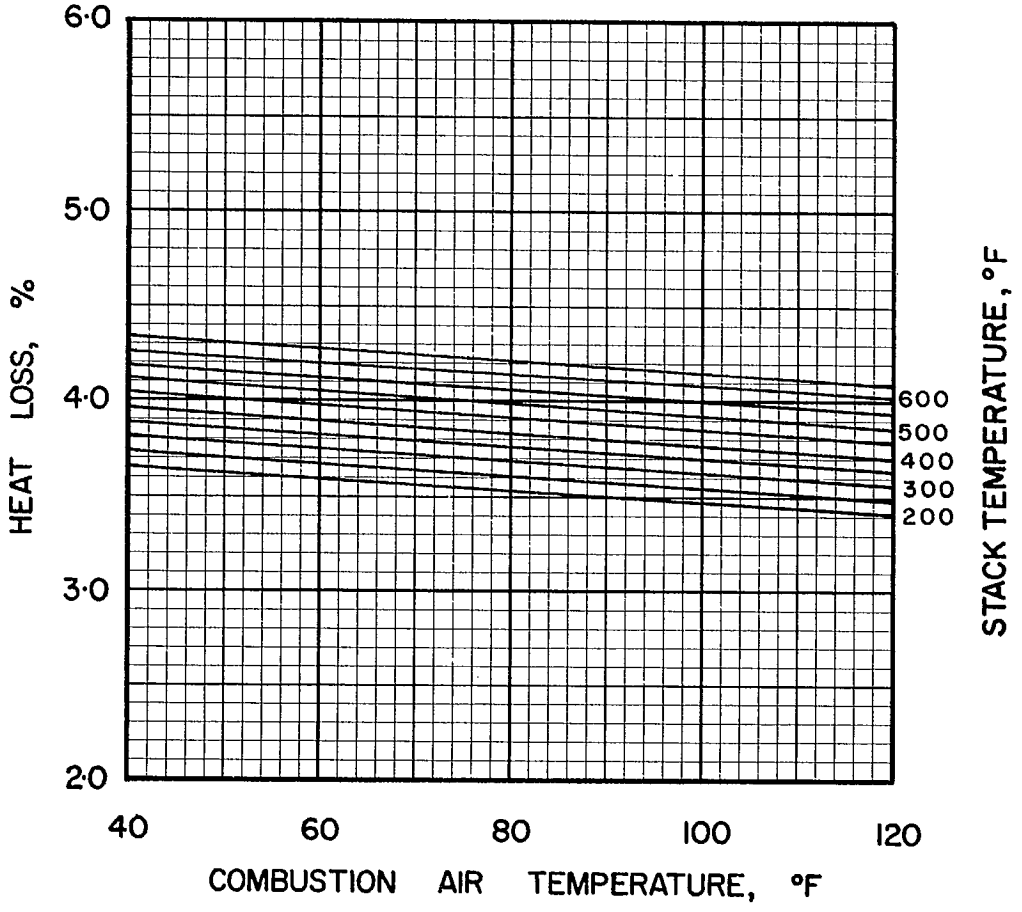

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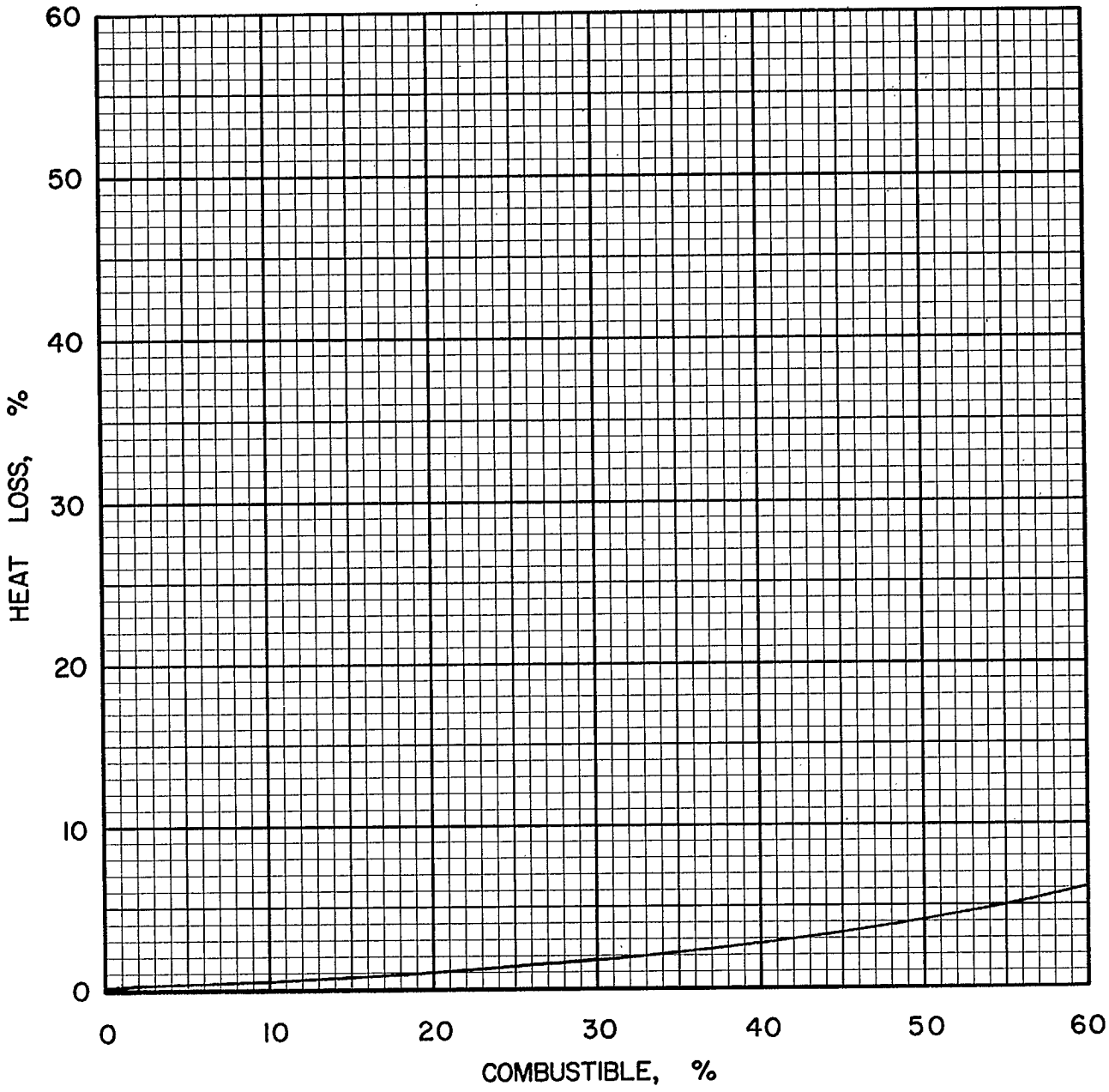

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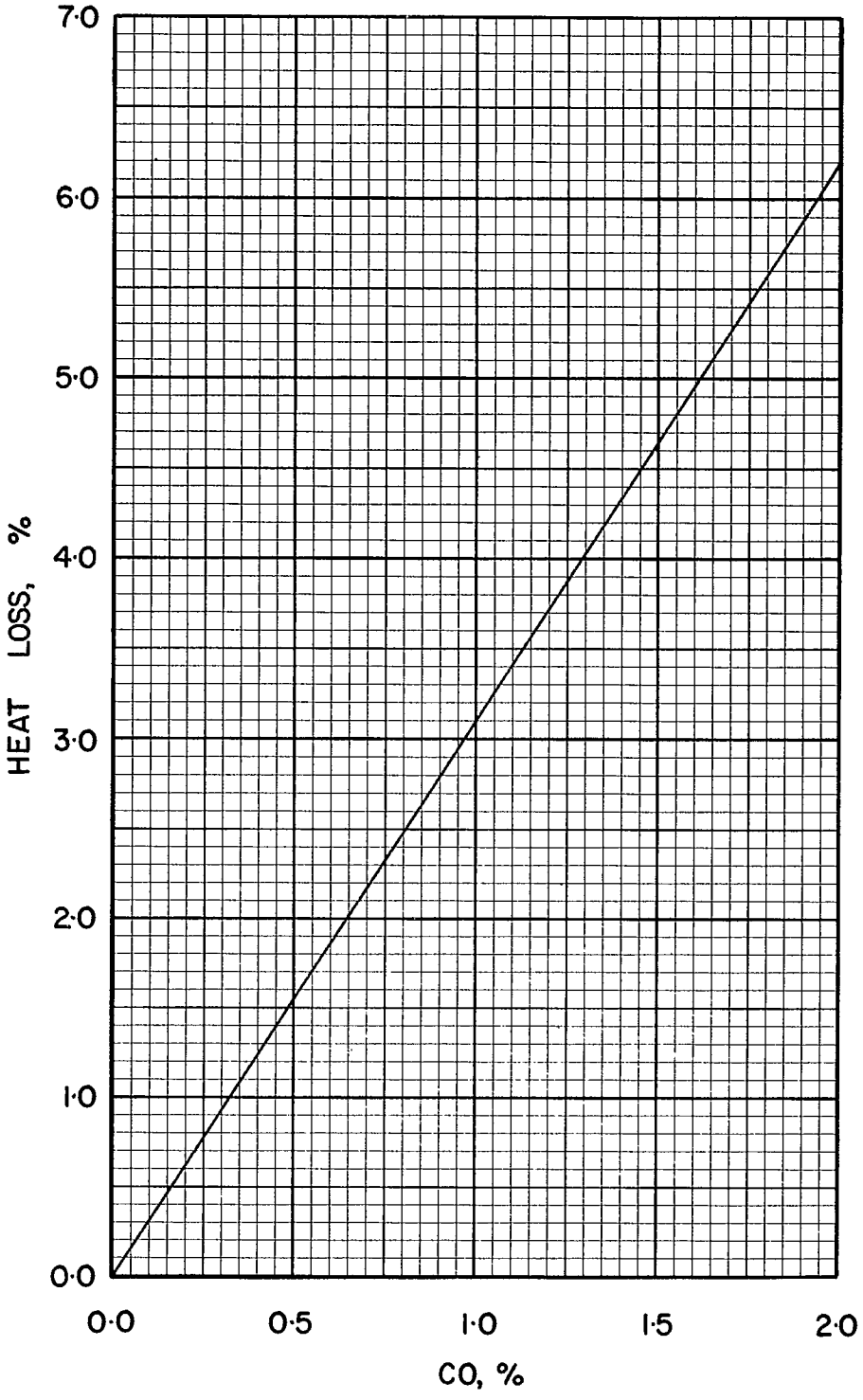
US·K·1



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US·K·1

COAL US K-2, GREER-ELLISON, FLOYD COUNTY

Typical Moisture Range: 0–8%

Proximate Analysis (lb/lb dry coal)

Ash	0.091
Volatile Matter	0.357
Fixed Carbon	0.552
Total	1.000

Ultimate Analysis (lb/lb dry coal)

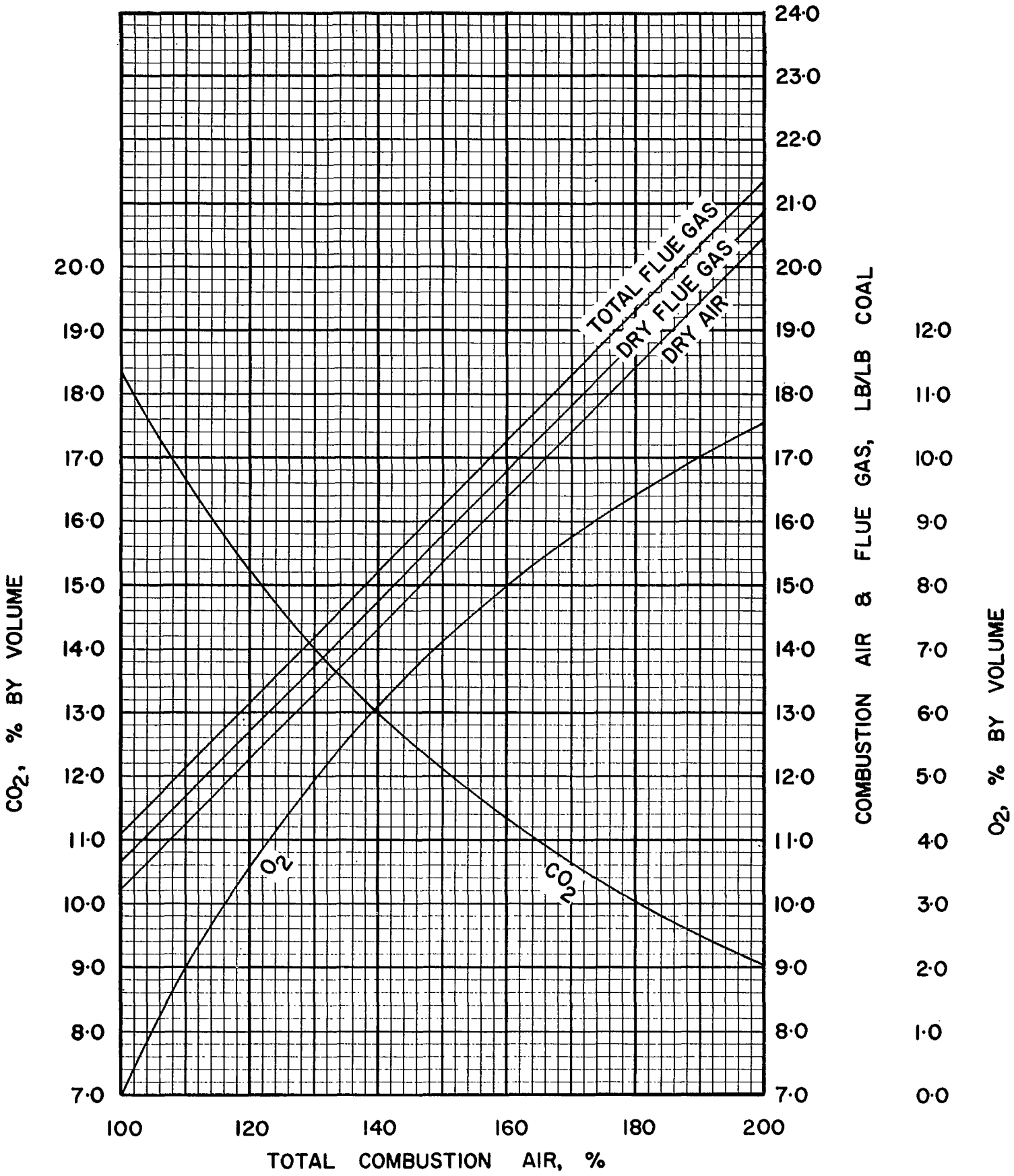
Carbon (C)	0.759
Hydrogen (H)	0.051
Sulphur (S)	0.012
Nitrogen (N)	0.017
Oxygen (O)	0.070
Ash	0.091
Total	1.000

Gross Calorific Value

Btu/lb:	13430
Btu/short ton:	26.86×10^6
Btu/long ton:	30.08×10^6
MJ/kg:	31.23

Conversion Factors

1 short ton = 0.8929 long tons = 2000 lb
10^6 Btu = 74.46 lb
10^6 Btu = 0.03723 short tons
10^6 Btu = 0.03324 long tons



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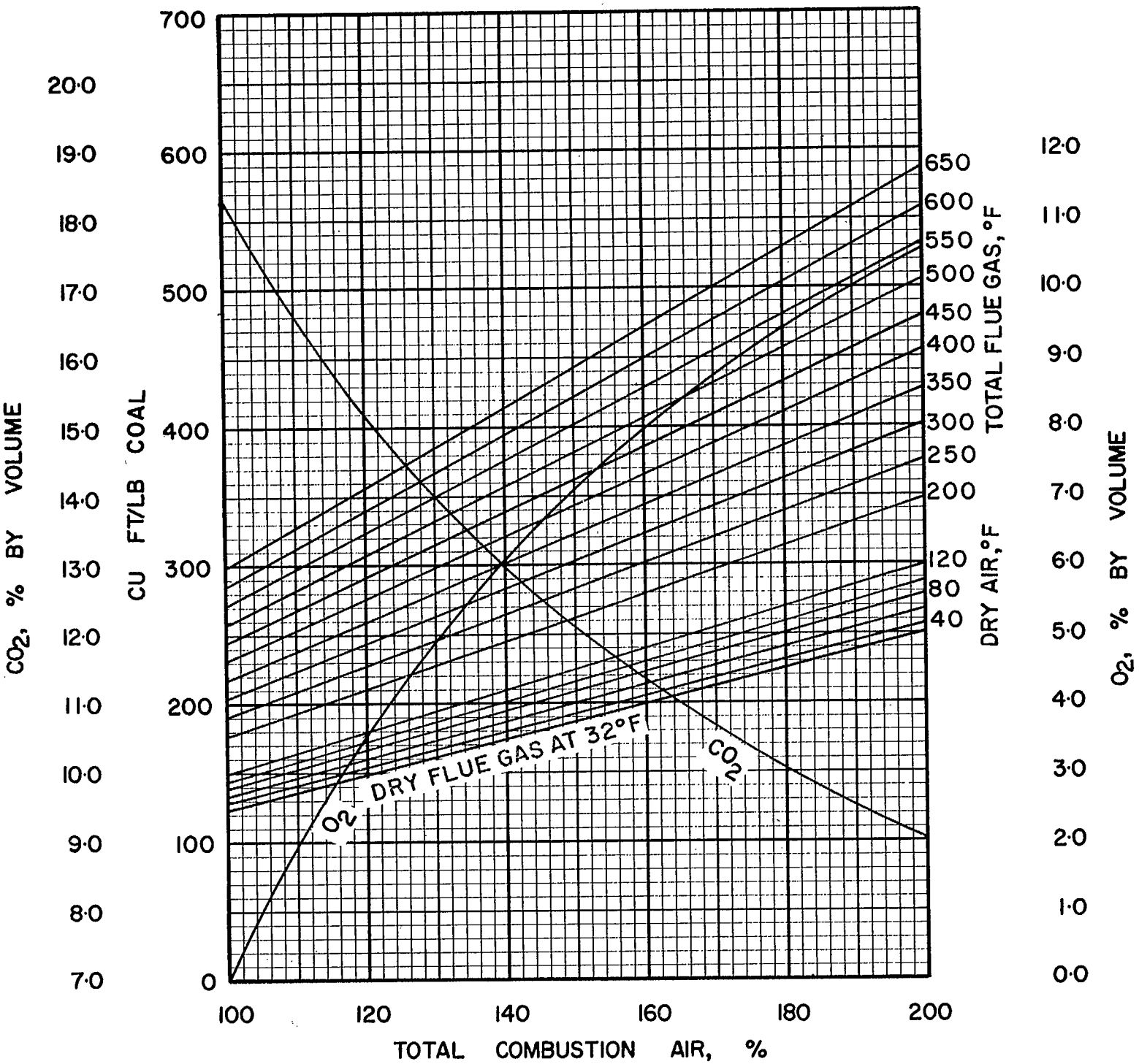

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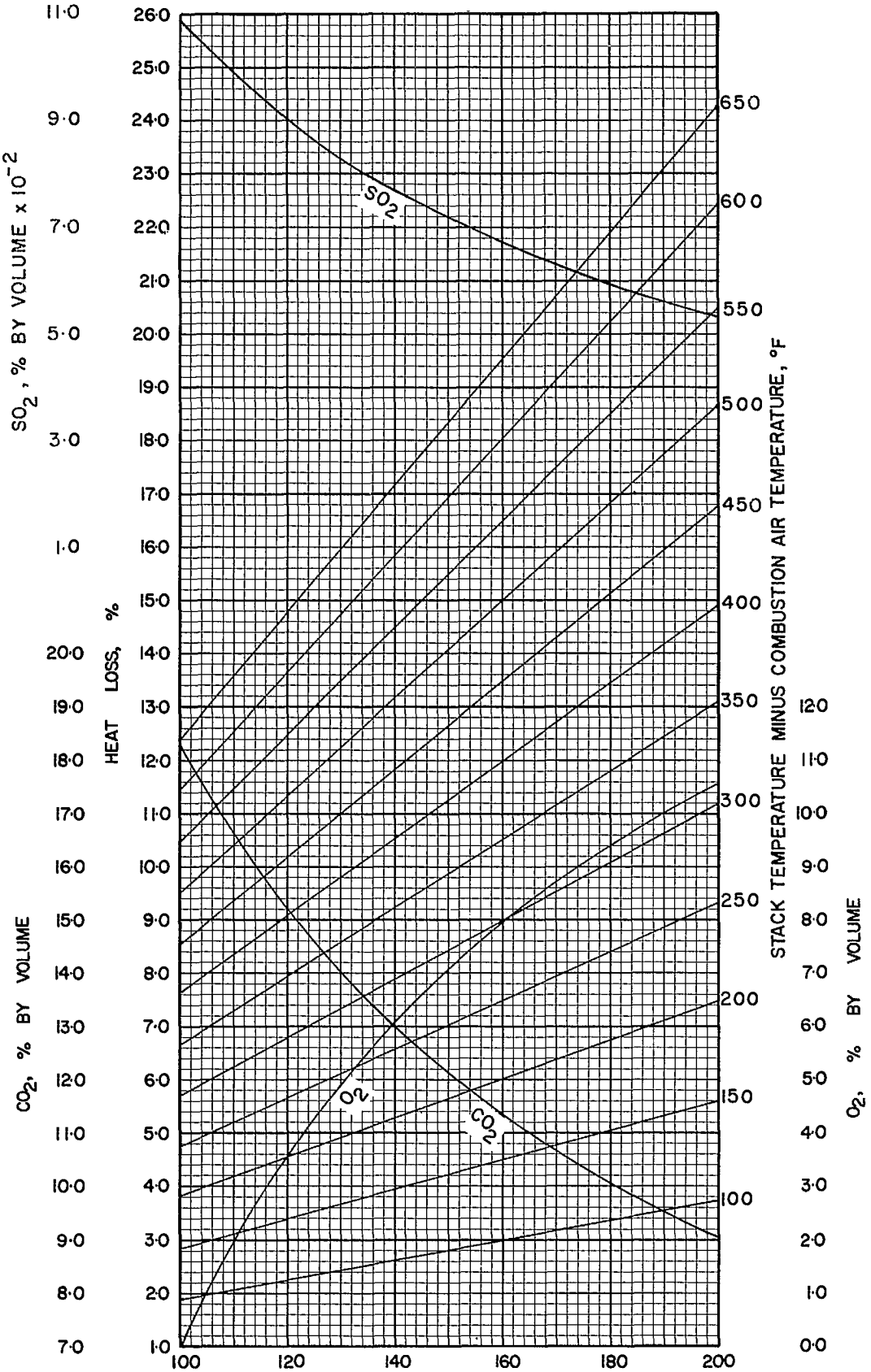
US·K·2



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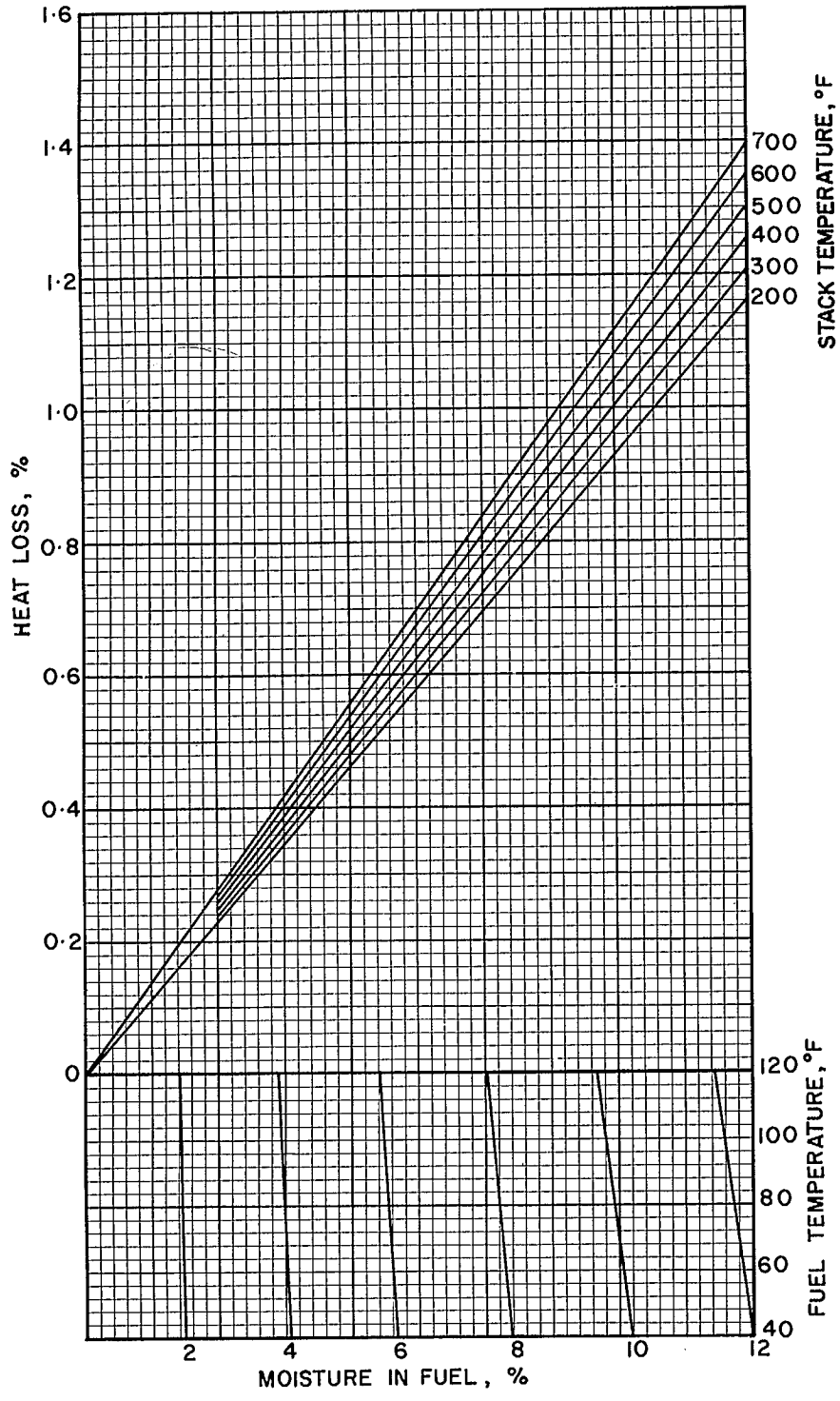
US·K·2



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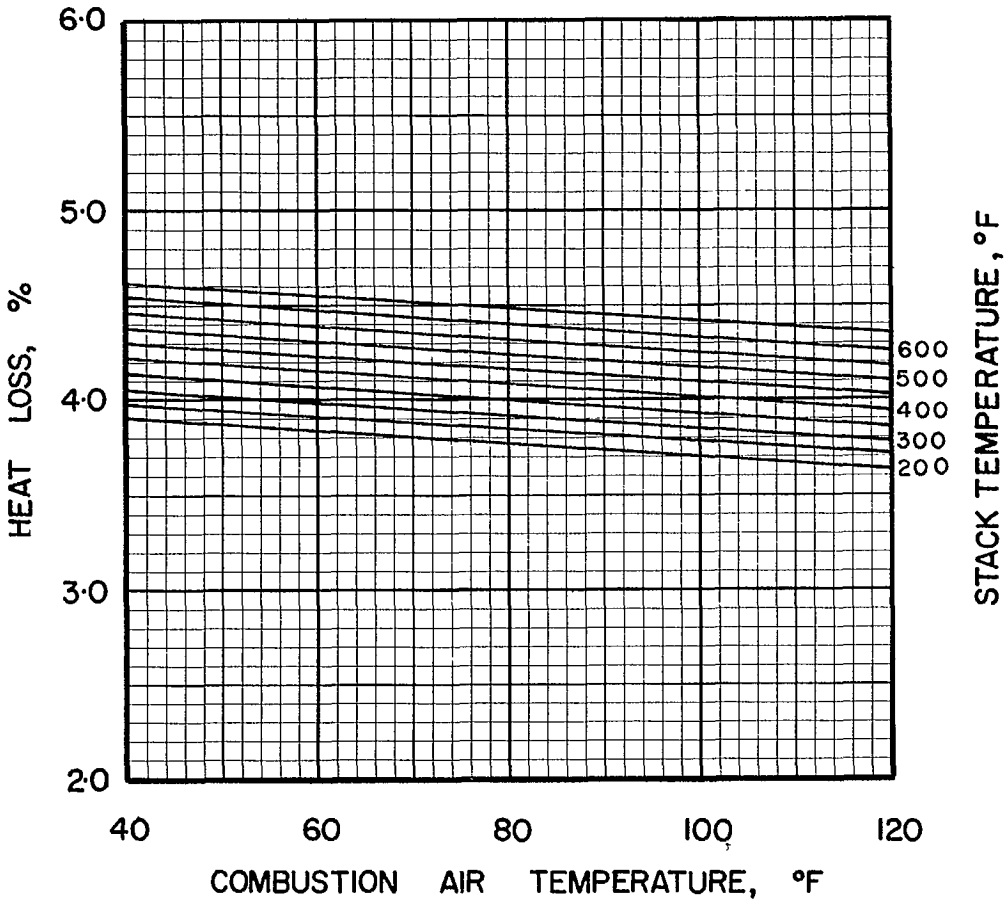
US·K·2



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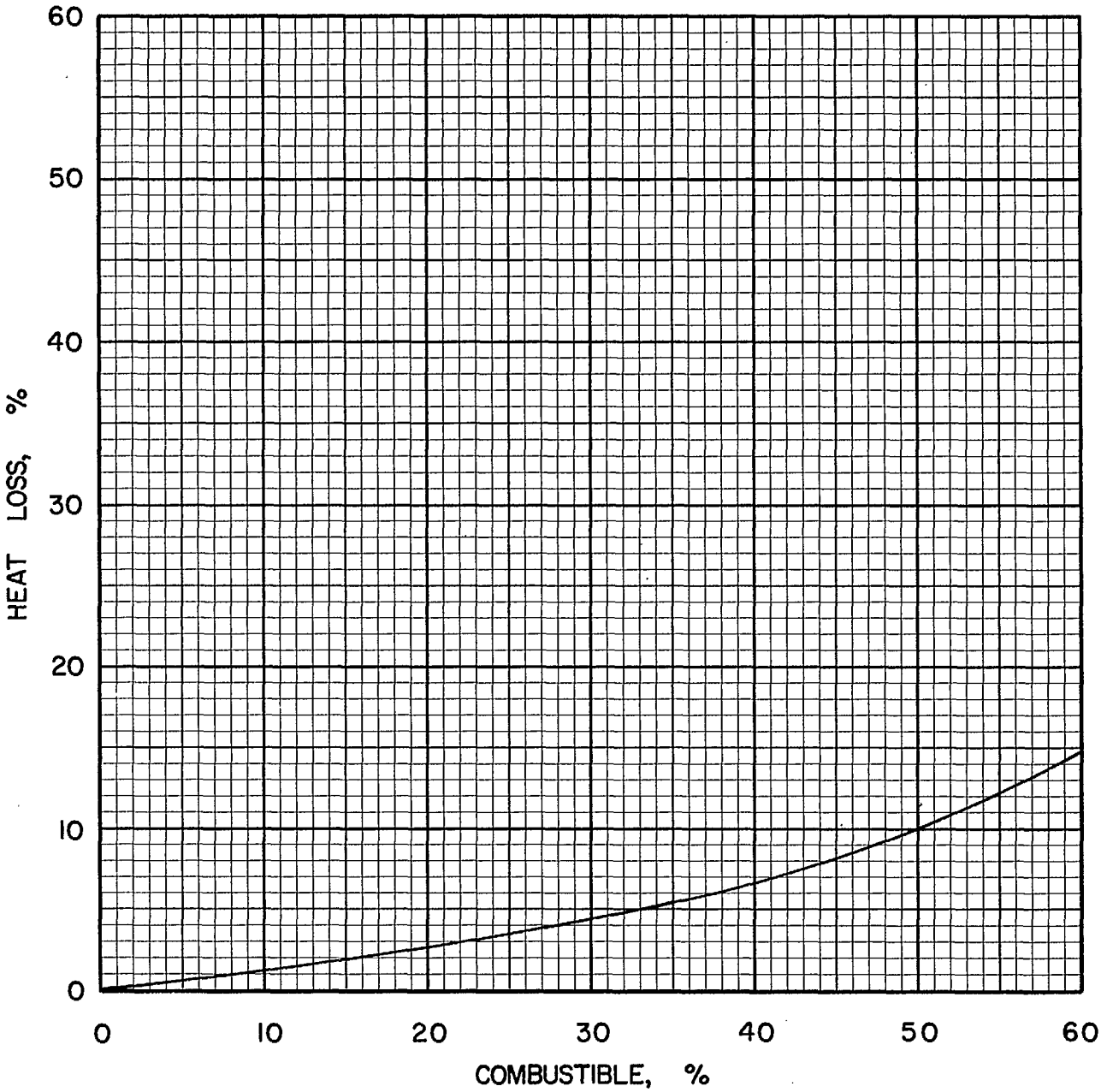

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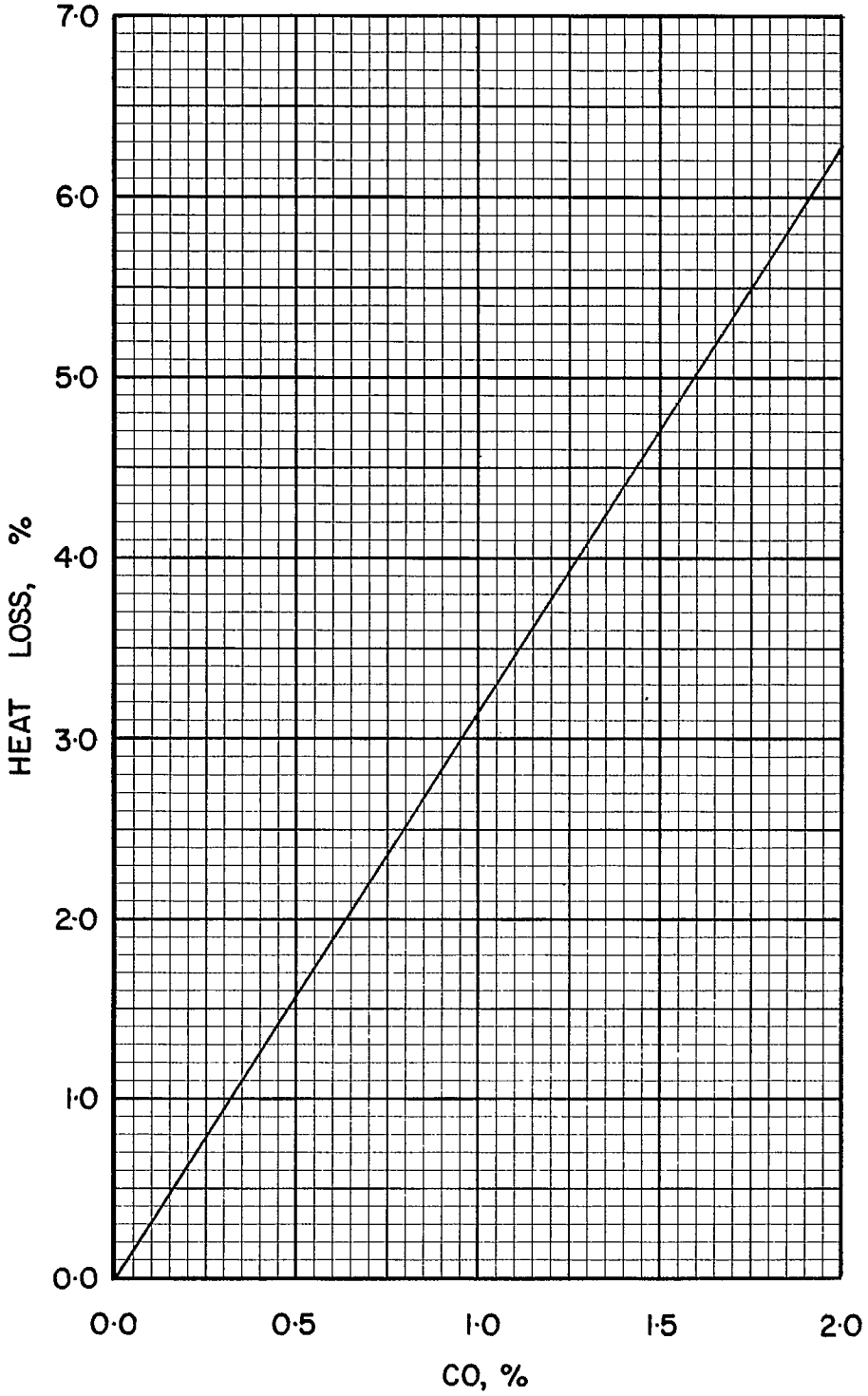

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US·K·2

COAL US 0-1, BROKEN ARO, OHIO No. 6

Typical Moisture Range: 0–8%

Proximate Analysis (lb/lb dry coal)

Ash	0.072
Volatile Matter	0.441
Fixed Carbon	0.487
Total	1.000

Ultimate Analysis (lb/lb dry coal)

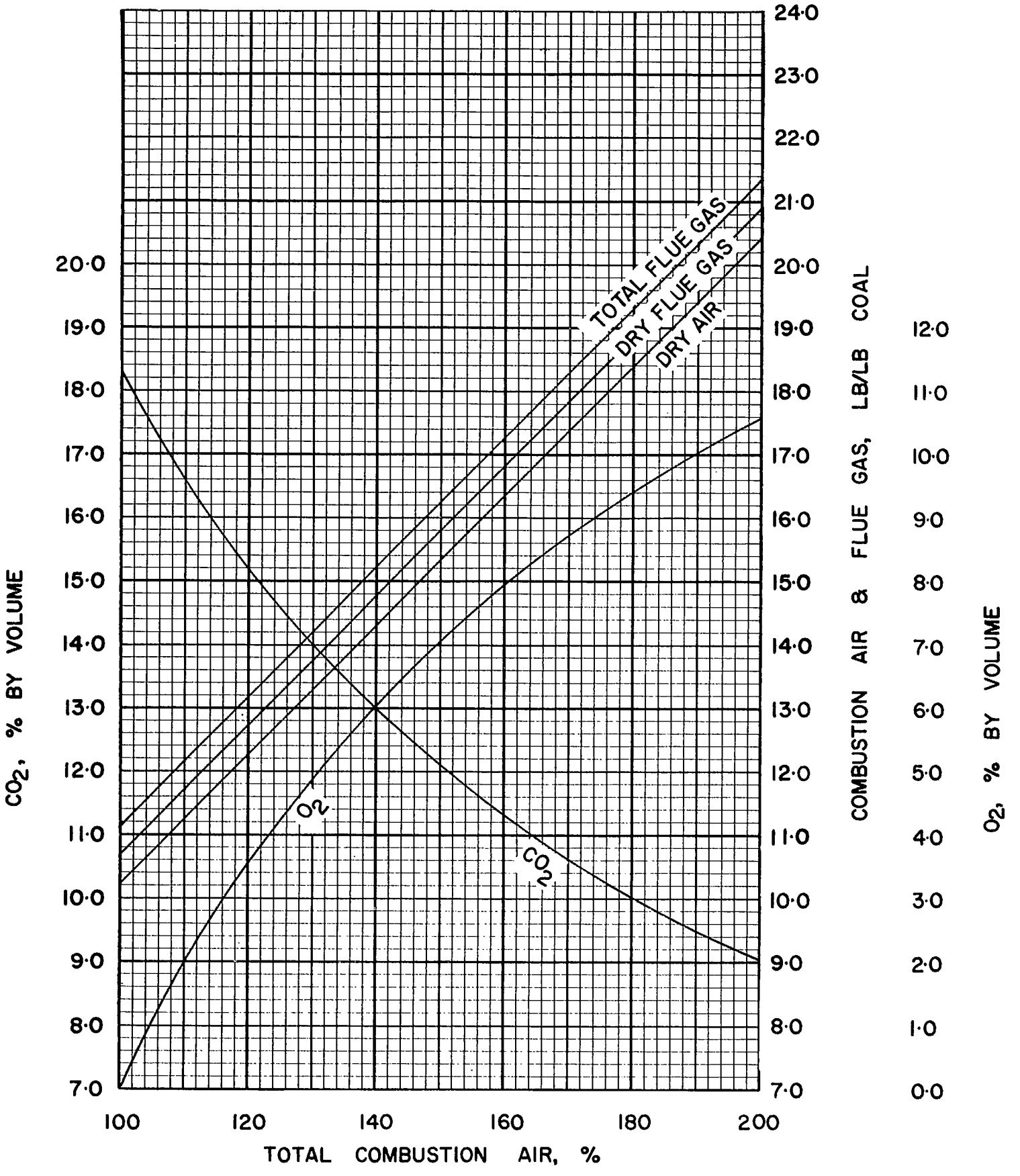
Carbon (C)	0.759
Hydrogen (H)	0.050
Sulphur (S)	0.025
Nitrogen (N)	0.018
Oxygen (O)	0.076
Ash	0.072
Total	1.000

Gross Calorific Value

Btu/lb:	13580
Btu/short ton:	27.16×10^6
Btu/long ton:	30.42×10^6
MJ/kg:	31.58

Conversion Factors

1 short ton = 0.8929 long tons = 2000 lb
10^6 Btu = 73.64 lb
10^6 Btu = 0.03682 short tons
10^6 Btu = 0.03287 long tons



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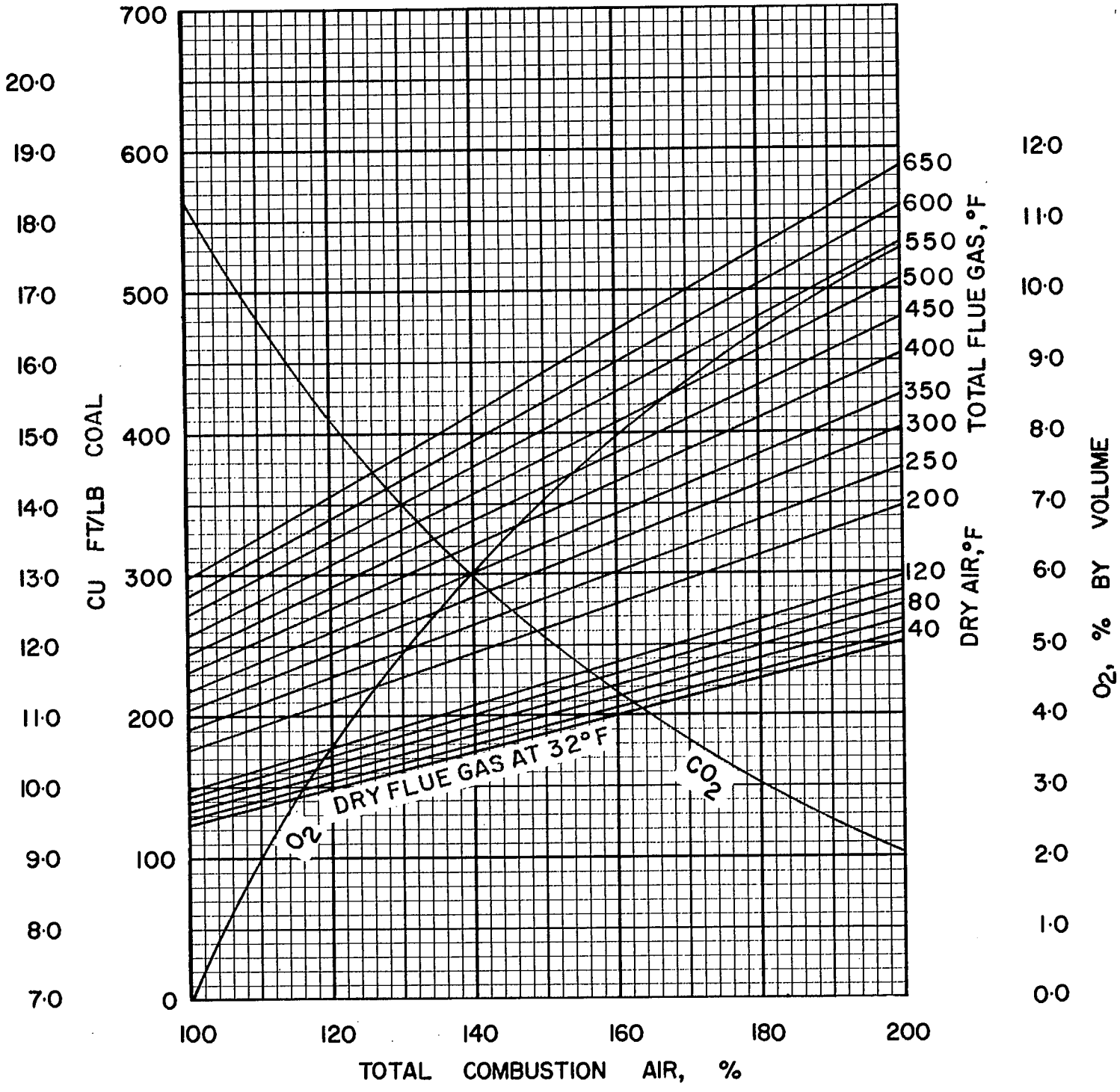

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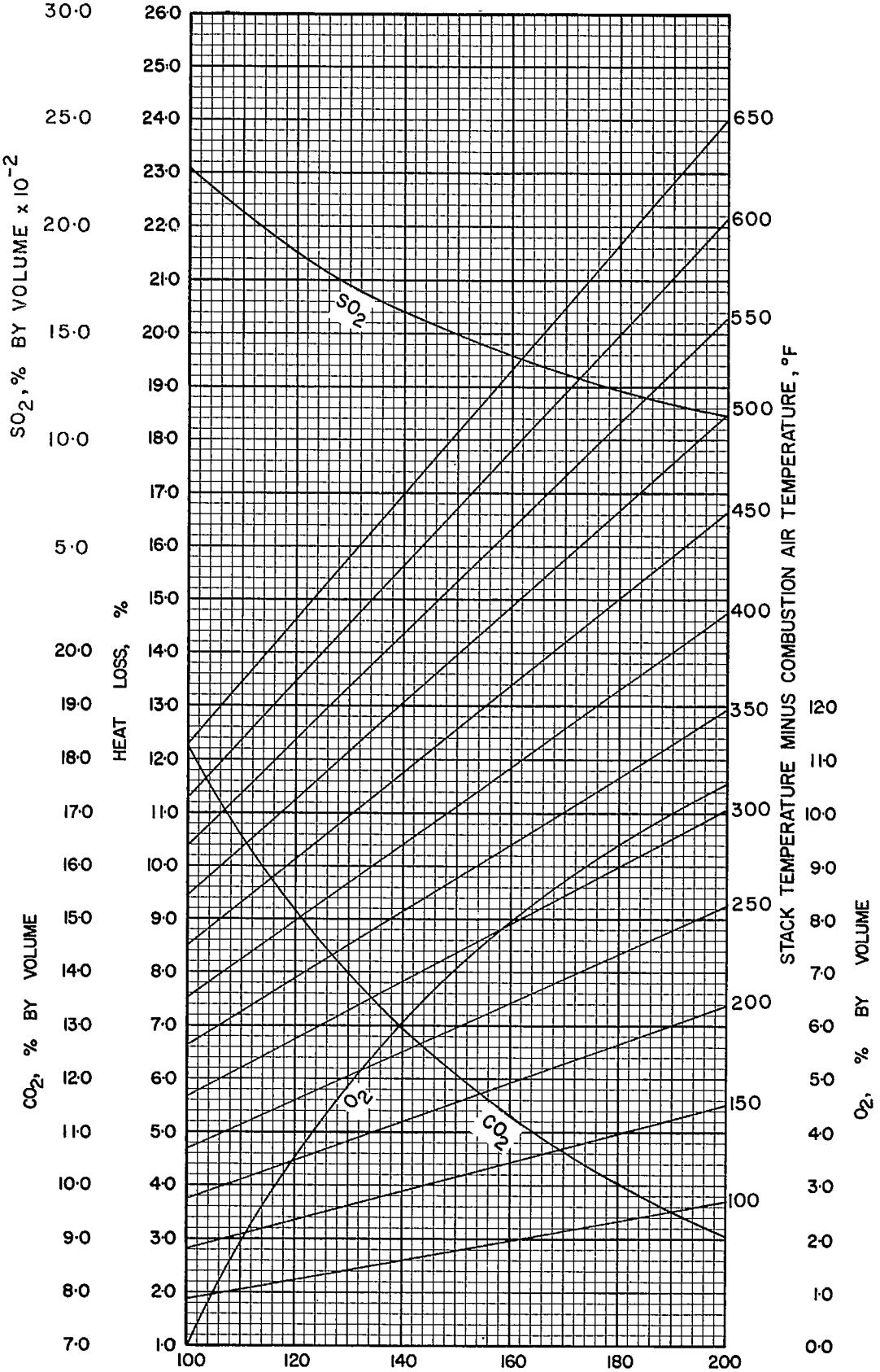

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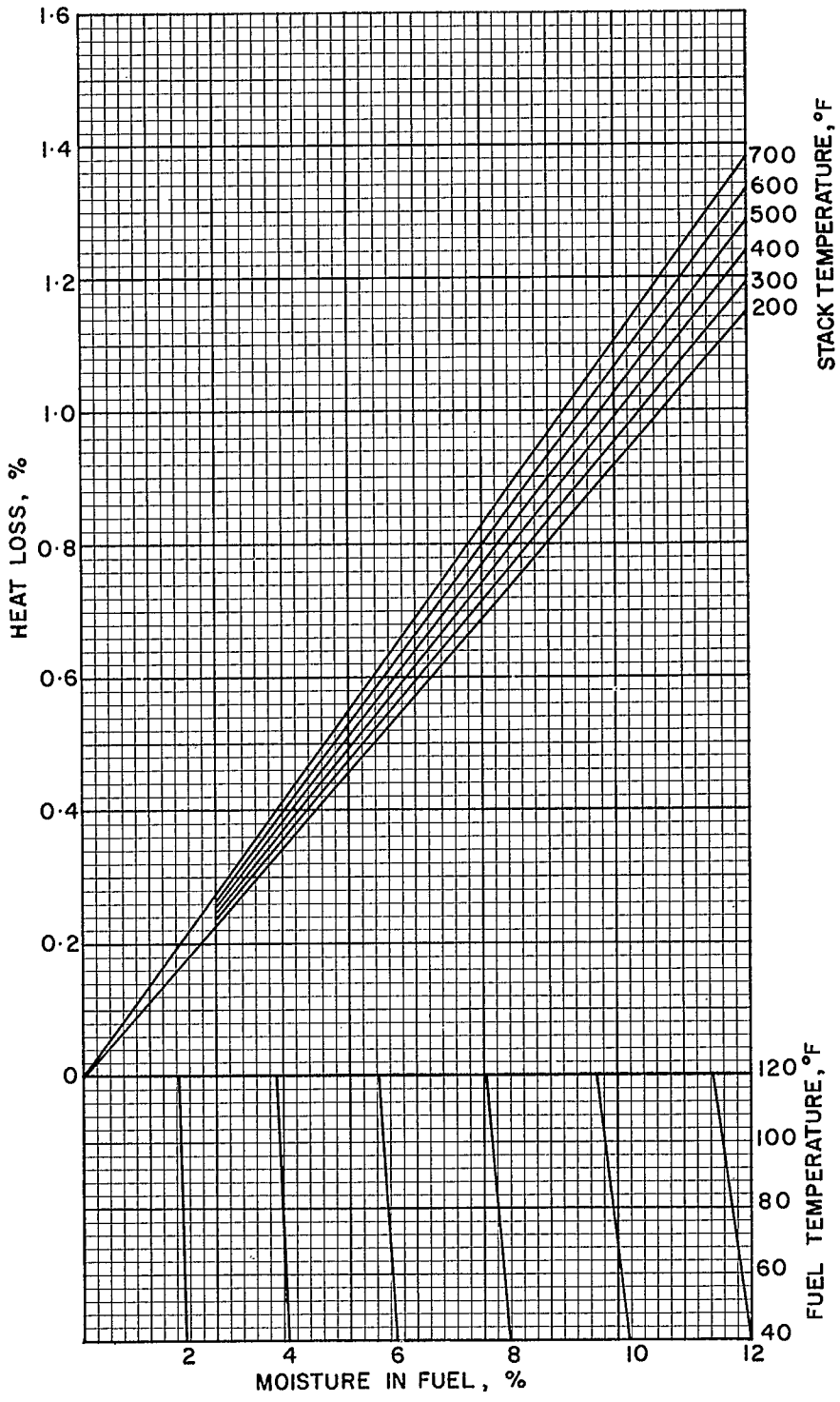

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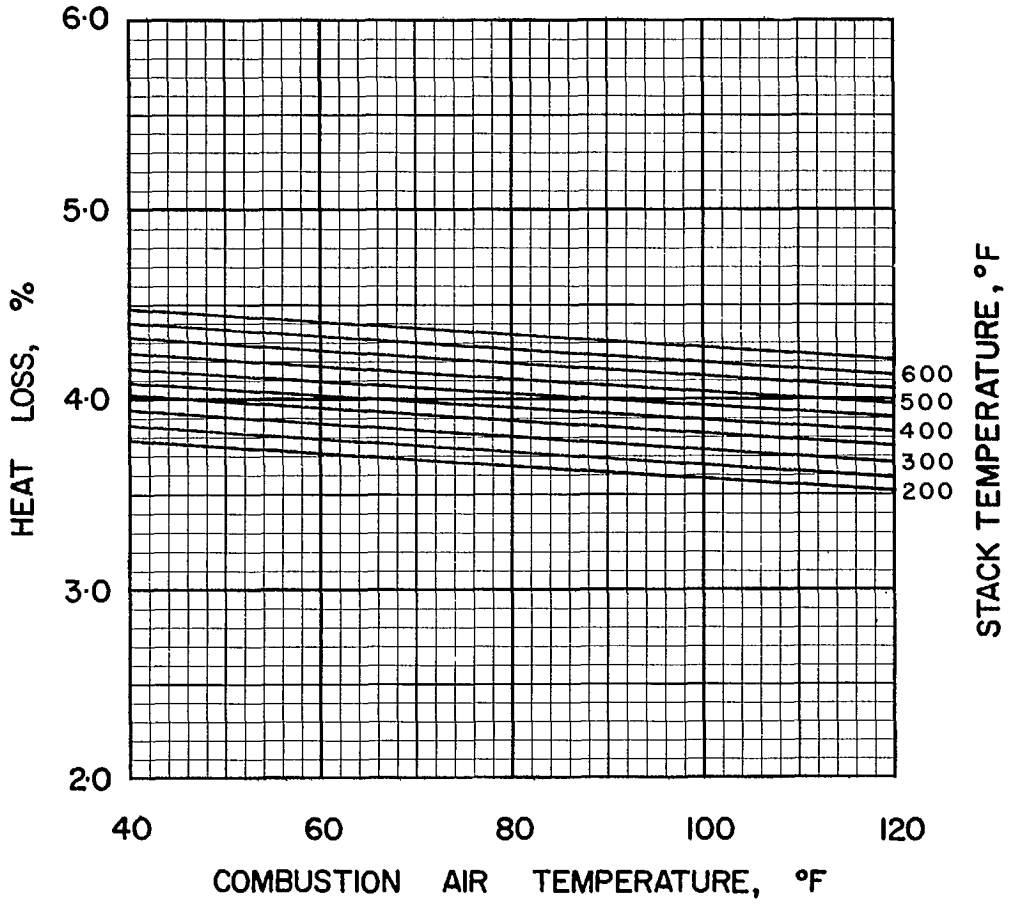

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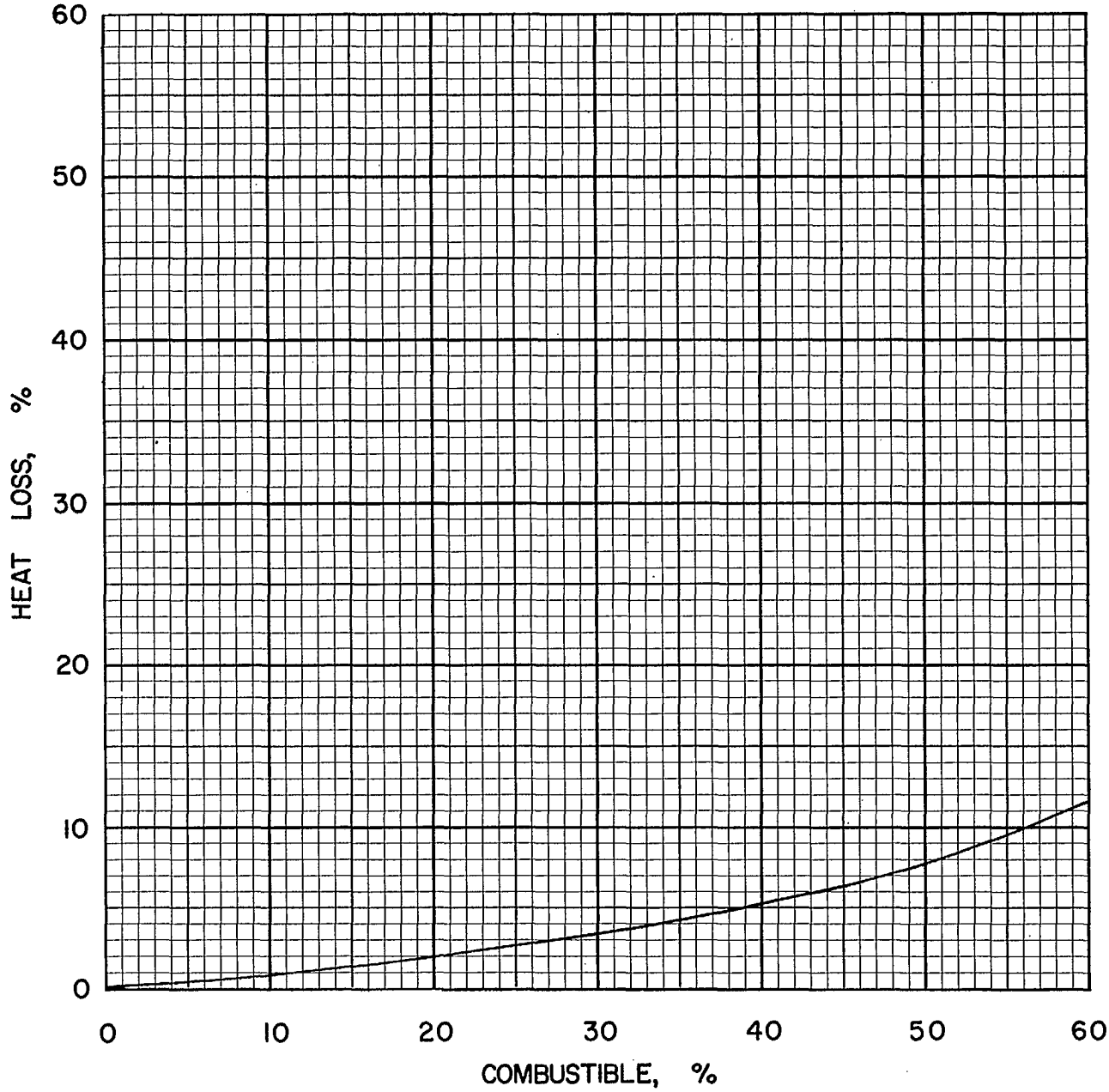

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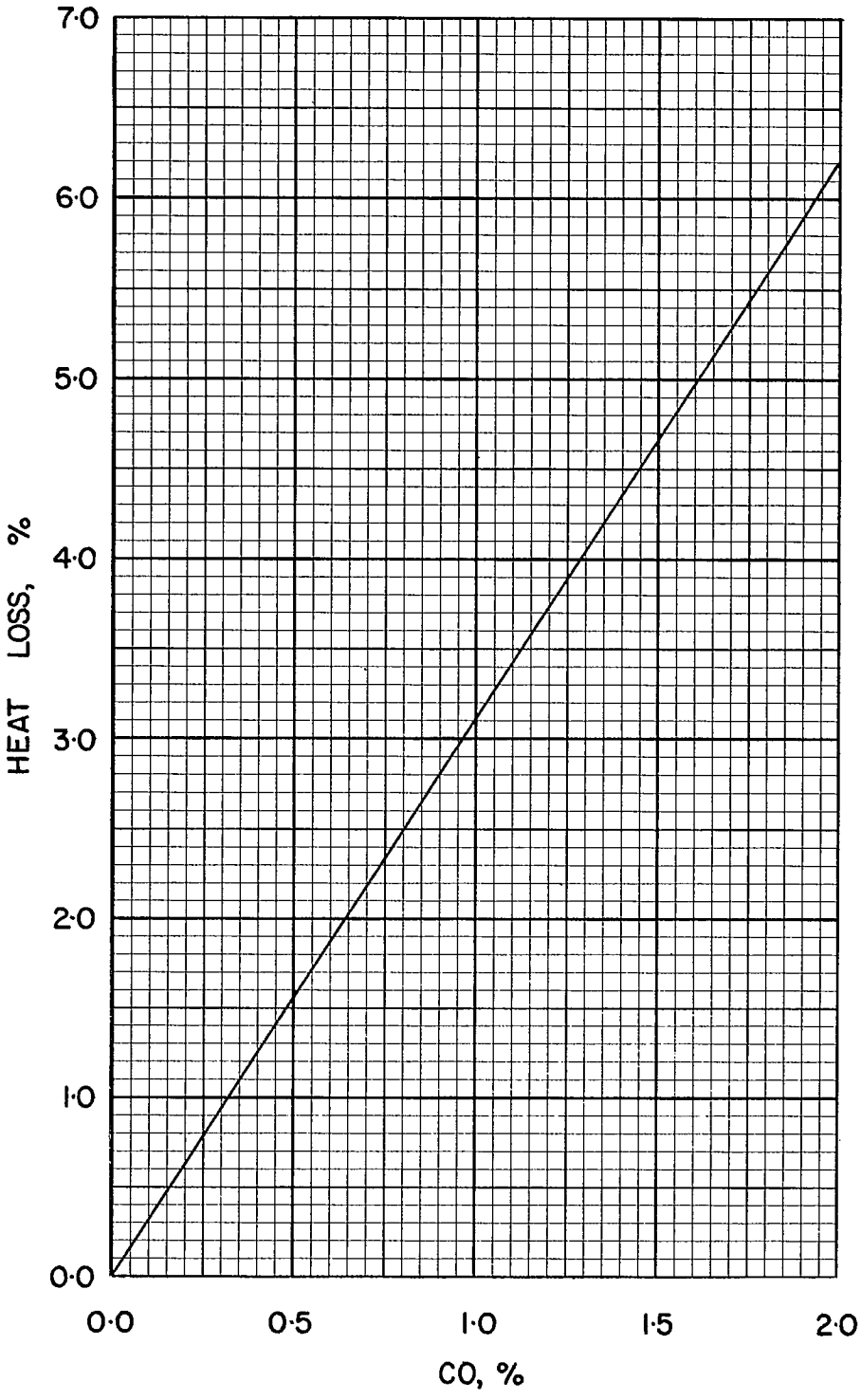


FIGURE 7 · HEAT LOSS FOR A RANGE OF CO CONCENTRATIONS, ASSUMING NEGLIGIBLE EXCESS AIR

US·0·1

COAL US 0-2, JENSIE, JEFFERSON COUNTY

Typical Moisture Range: 0--8%

Proximate Analysis (lb/lb dry coal)

Ash	0.049
Volatile Matter	0.460
Fixed Carbon	0.491
Total	1.000

Ultimate Analysis (lb/lb dry coal)

Carbon (C)	0.781
Hydrogen (H)	0.052
Sulphur (S)	0.031
Nitrogen (N)	0.015
Oxygen (O)	0.072
Ash	0.049
Total	1.000

Gross Calorific Value

Btu/lb:	13650
Btu/short ton:	27.30×10^6
Btu/long ton:	30.58×10^6
MJ/kg:	31.74

Conversion Factors

1 short ton = 0.8929 long tons = 2000 lb
10^6 Btu = 73.26 lb
10^6 Btu = 0.03663 short tons
10^6 Btu = 0.03271 long tons

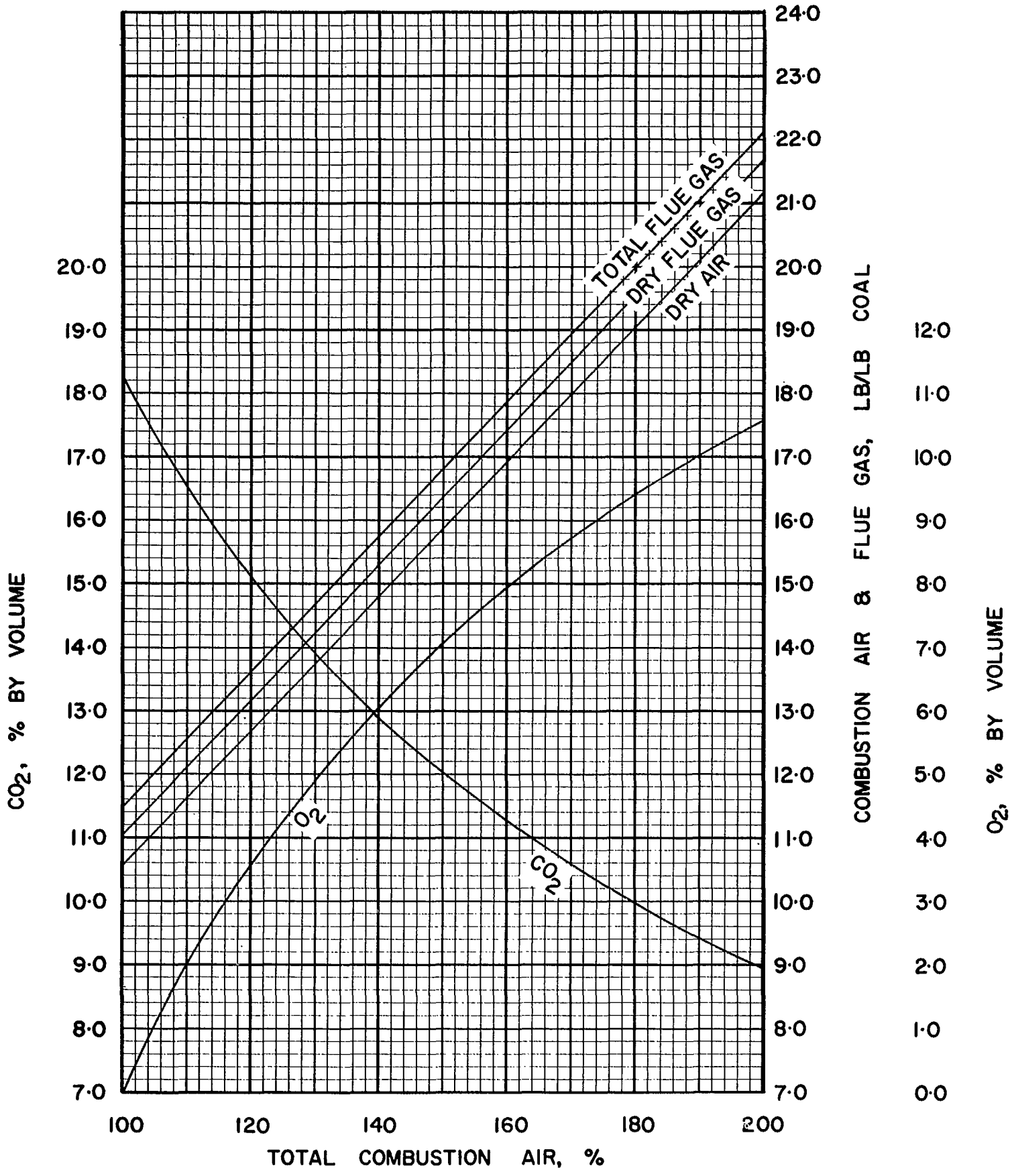
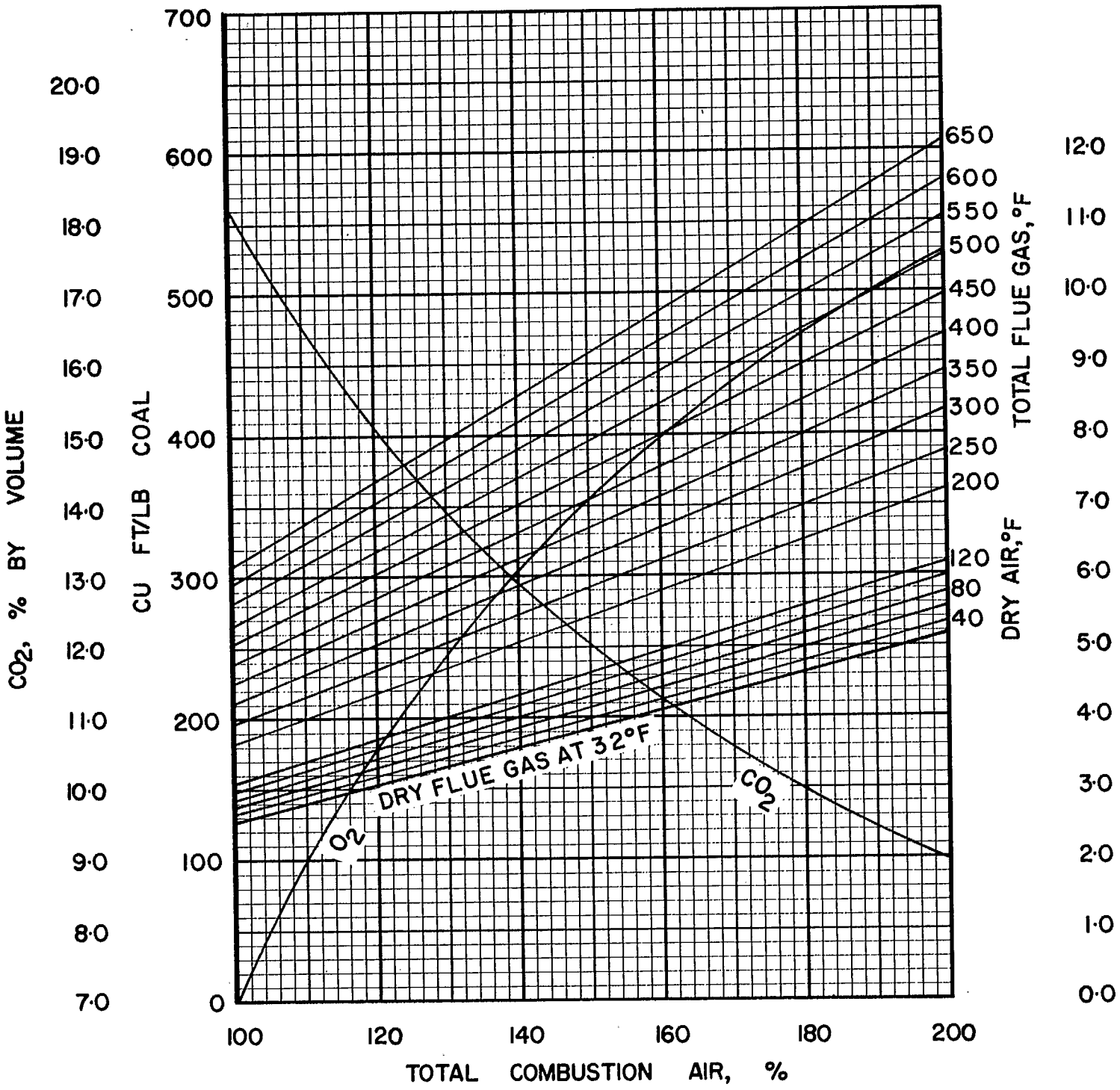


FIGURE 1· COMBUSTION DATA, WEIGHT BASIS

US·0·2



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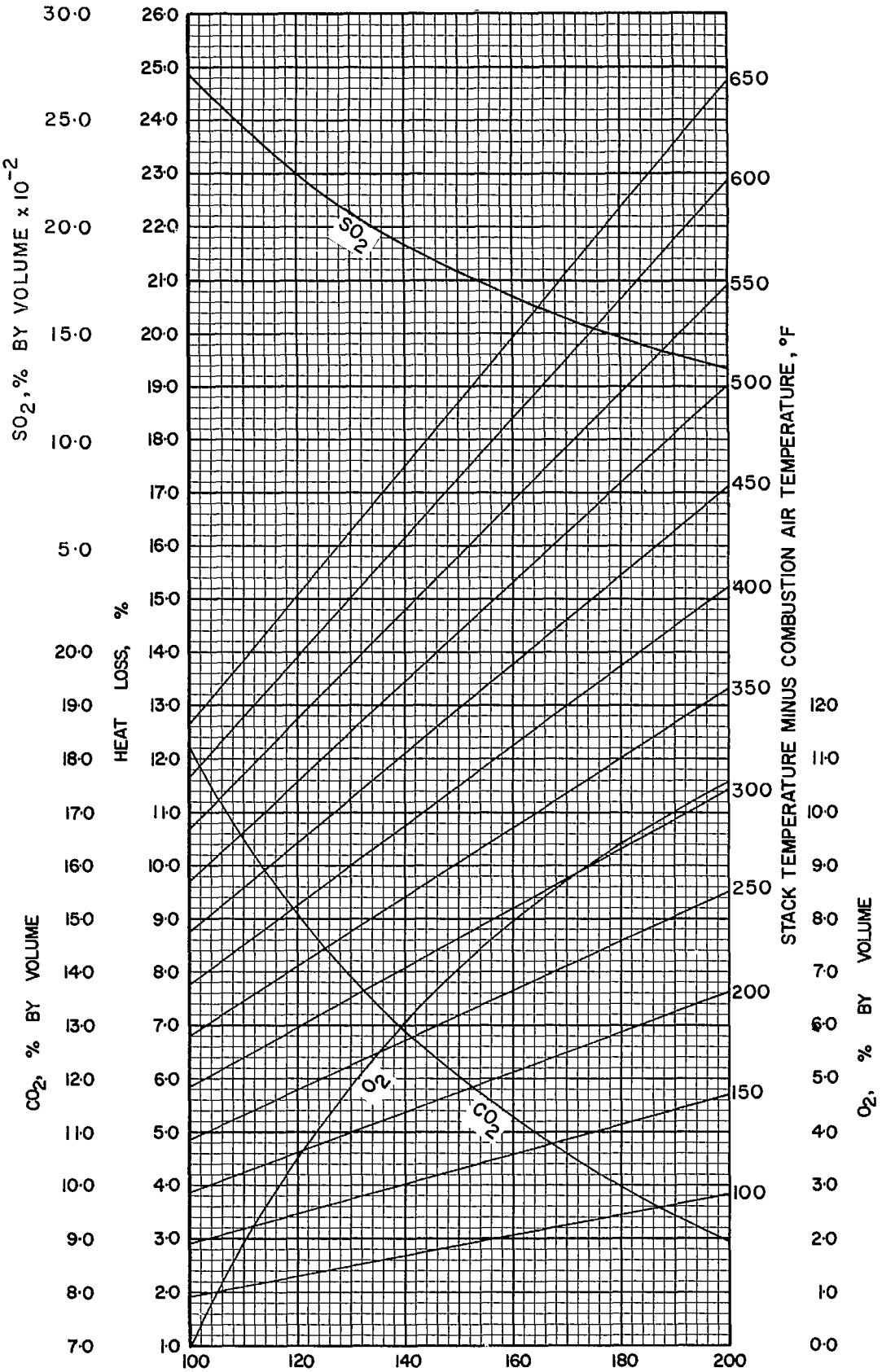

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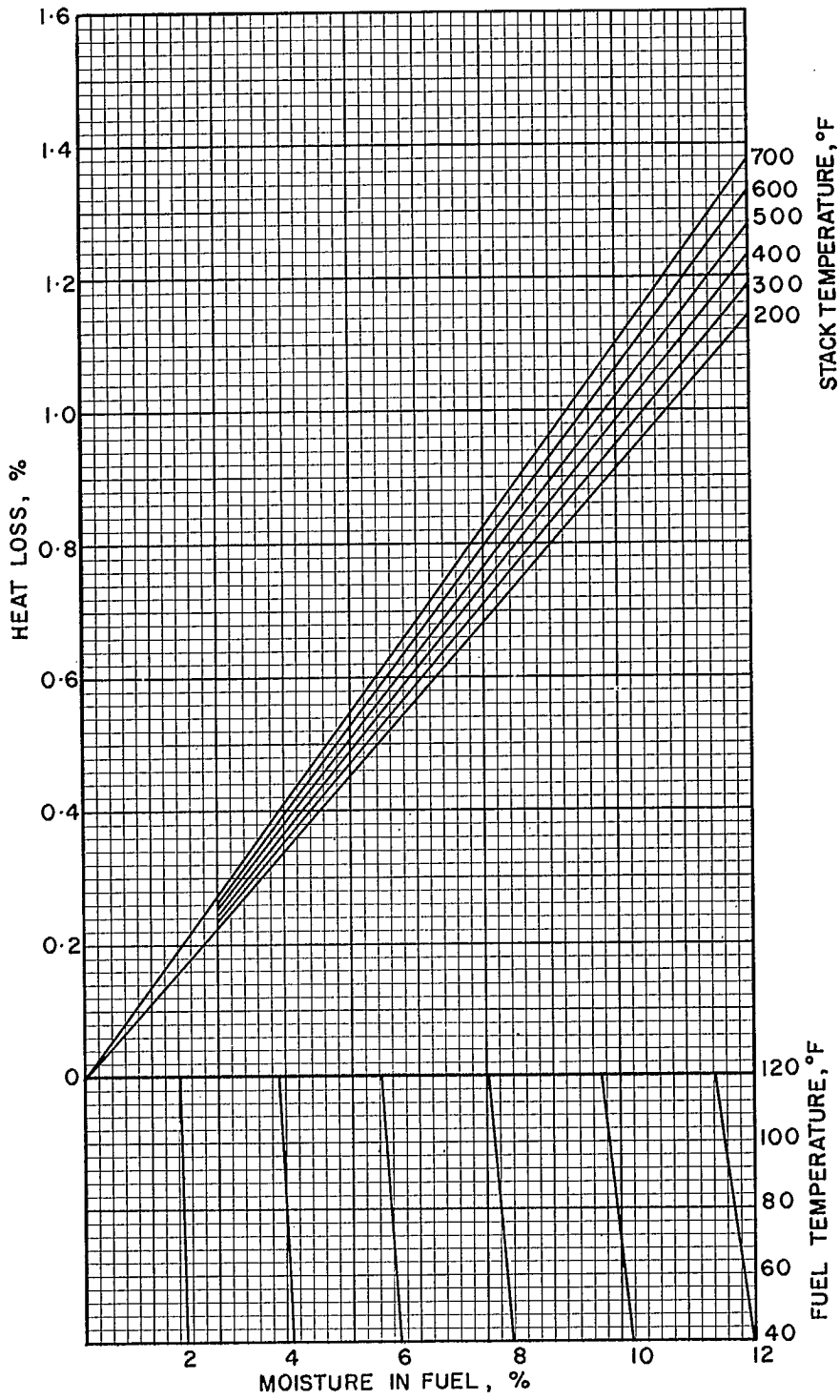
US·0·2



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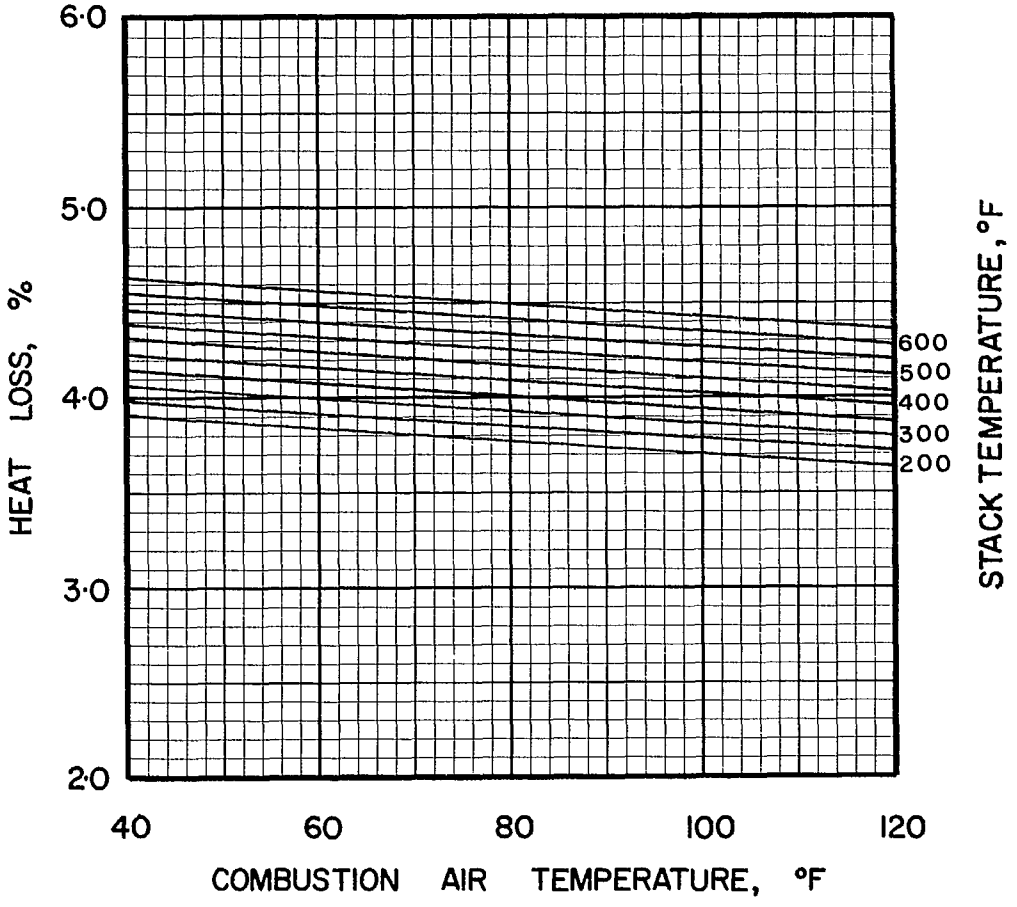

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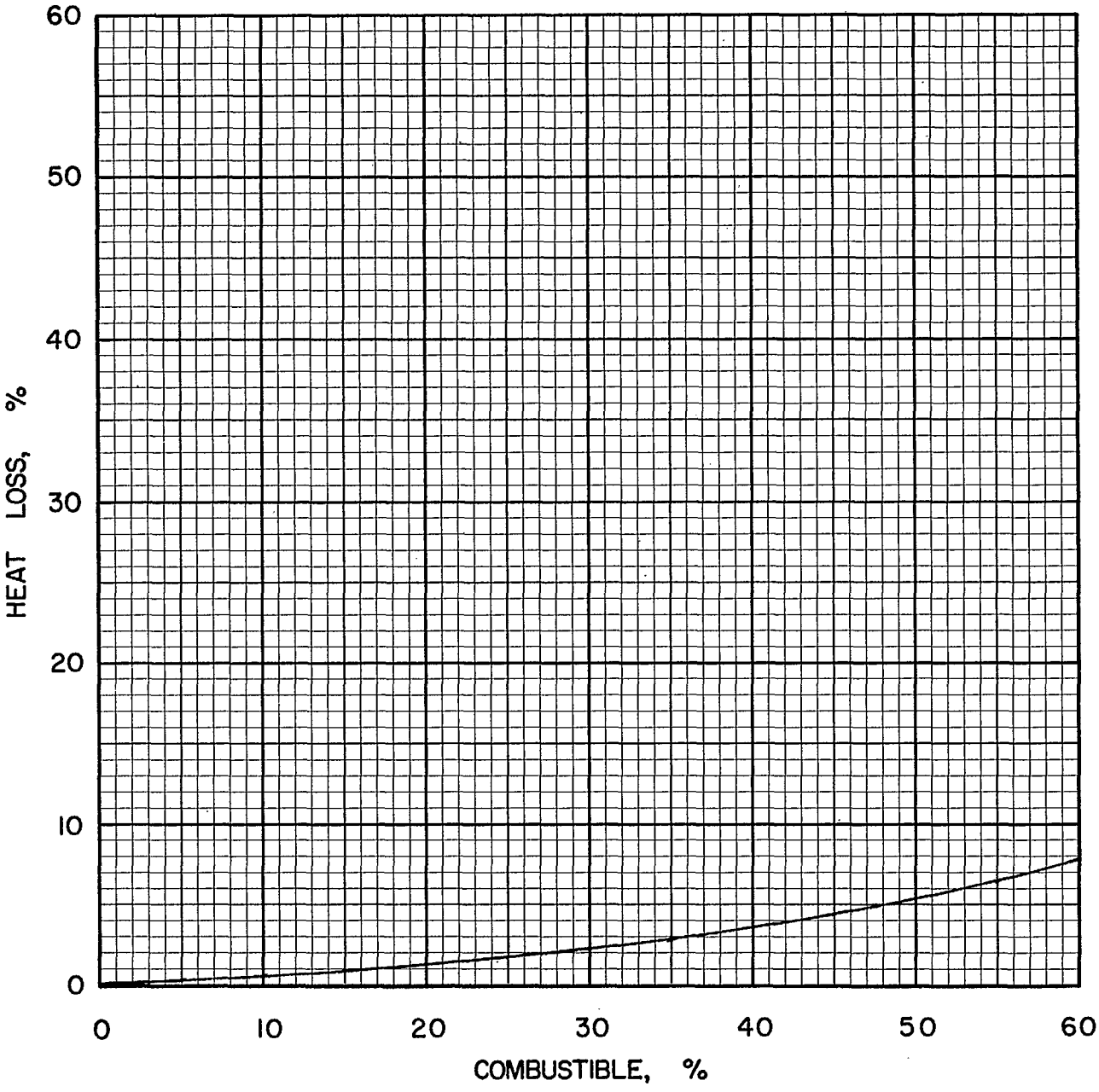

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US·0·2

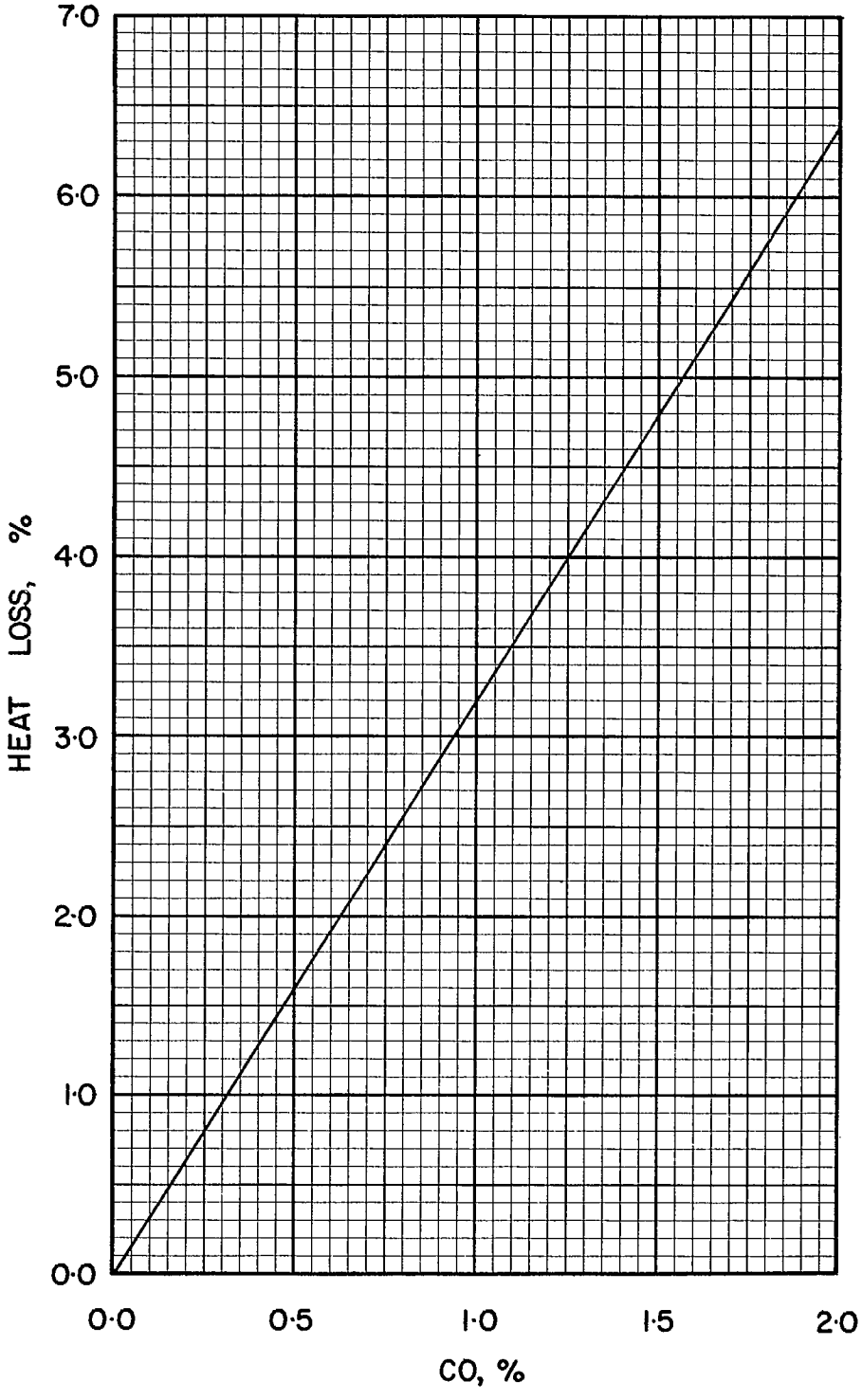


FIGURE 7 · HEAT LOSS FOR A RANGE OF CO CONCENTRATIONS, ASSUMING NEGLIGIBLE EXCESS AIR

US·0·2

COAL US 0-3, SUNNYHILL, MIDDLE KITTANNING No. 6

Typical Moisture Range: 4–10%

Proximate Analysis (lb/lb dry coal)

Ash	0.137
Volatile Matter	0.390
Fixed Carbon	0.473
Total	1.000

Ultimate Analysis (lb/lb dry coal)

Carbon (C)	0.703
Hydrogen (H)	0.050
Sulphur (S)	0.029
Nitrogen (N)	0.015
Oxygen (O)	0.066
Ash	0.137
Total	1.000

Gross Calorific Value

Btu/lb:	12324
Btu/short ton:	24.65×10^6
Btu/long ton:	27.61×10^6
MJ/kg:	28.66

Conversion Factors

1 short ton = 0.8929 long tons = 2000 lb
10^6 Btu = 81.14 lb
10^6 Btu = 0.04057 short tons
10^6 Btu = 0.03622 long tons

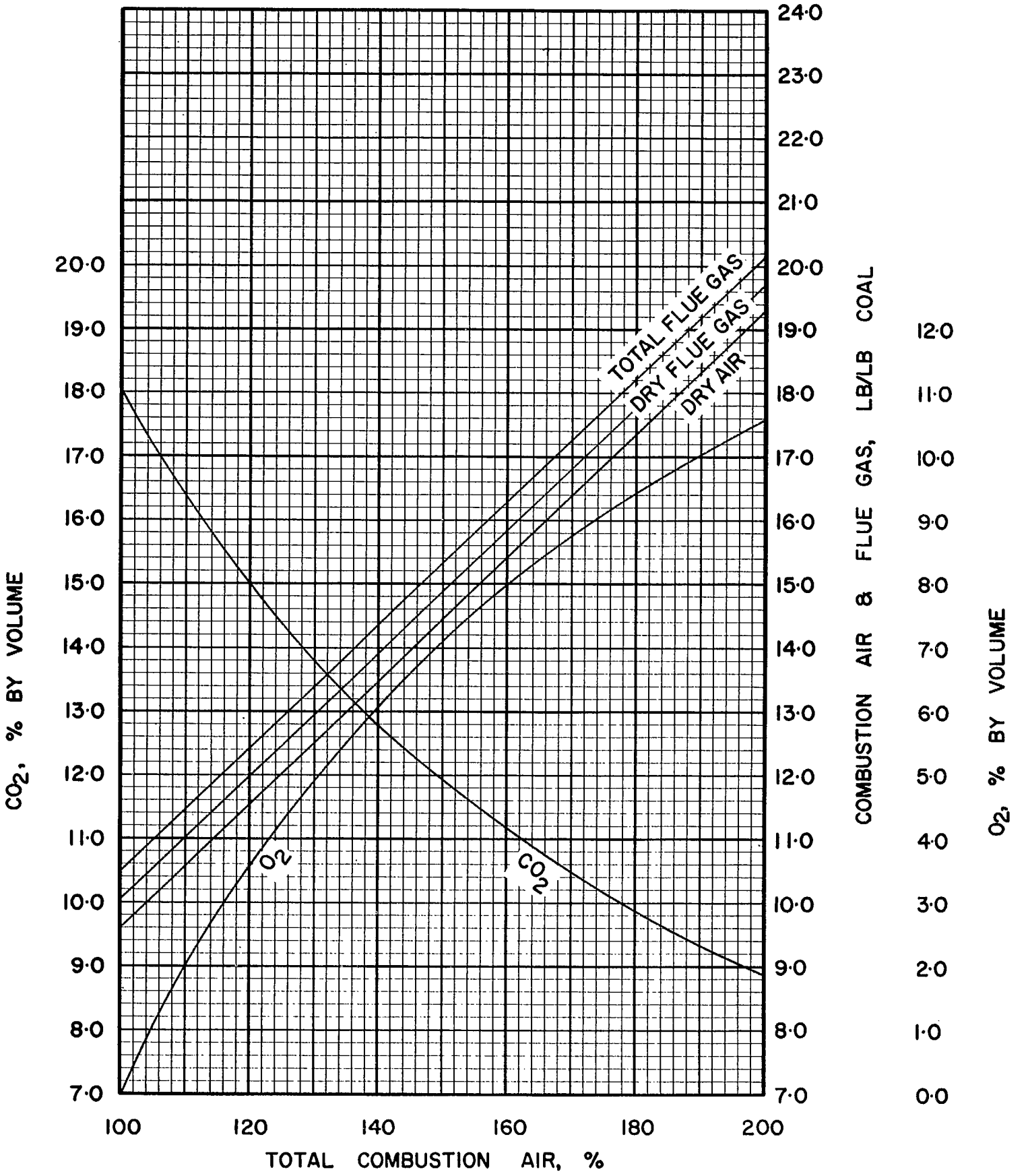


FIGURE 1· COMBUSTION DATA, WEIGHT BASIS

US·0·3

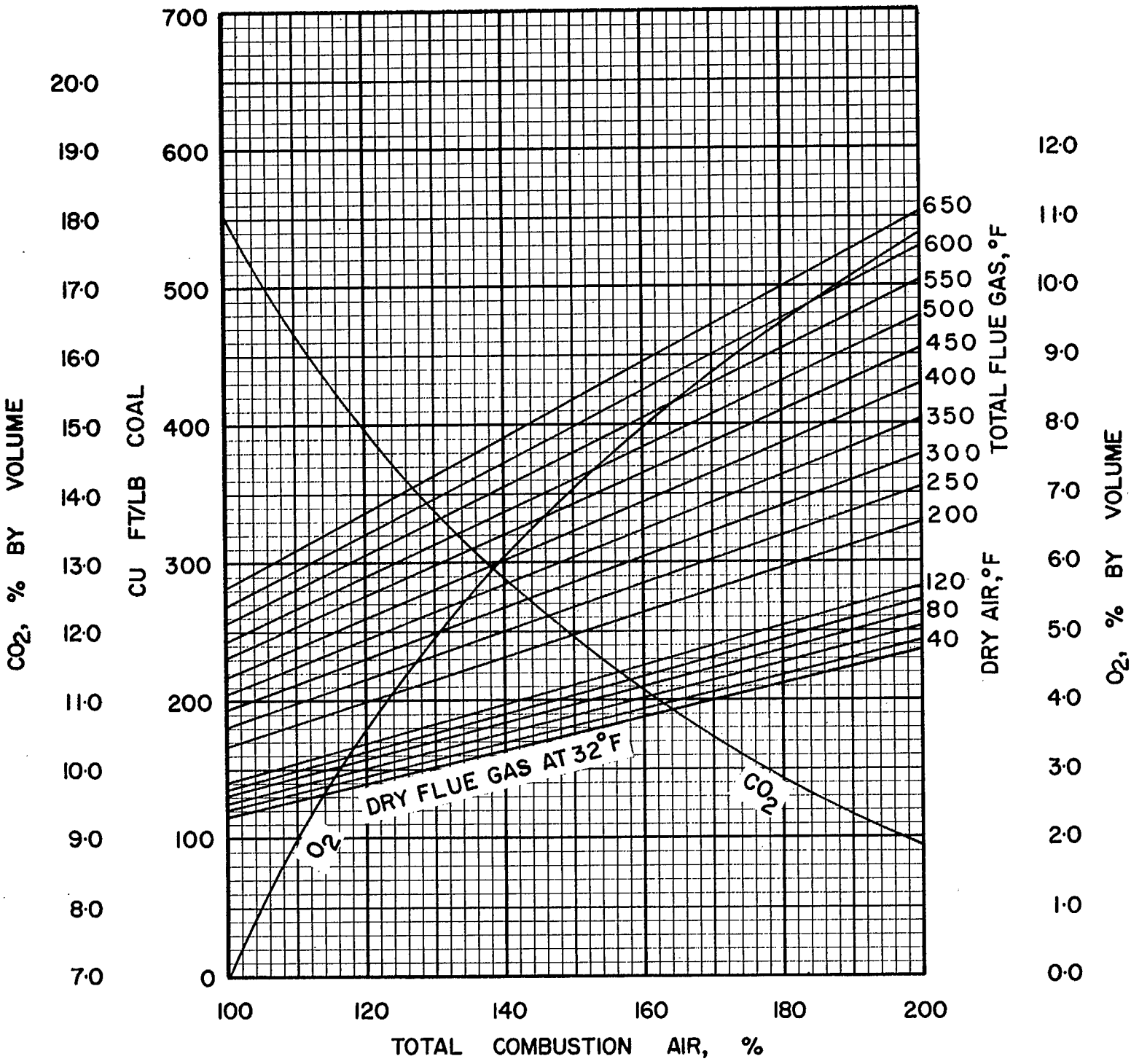
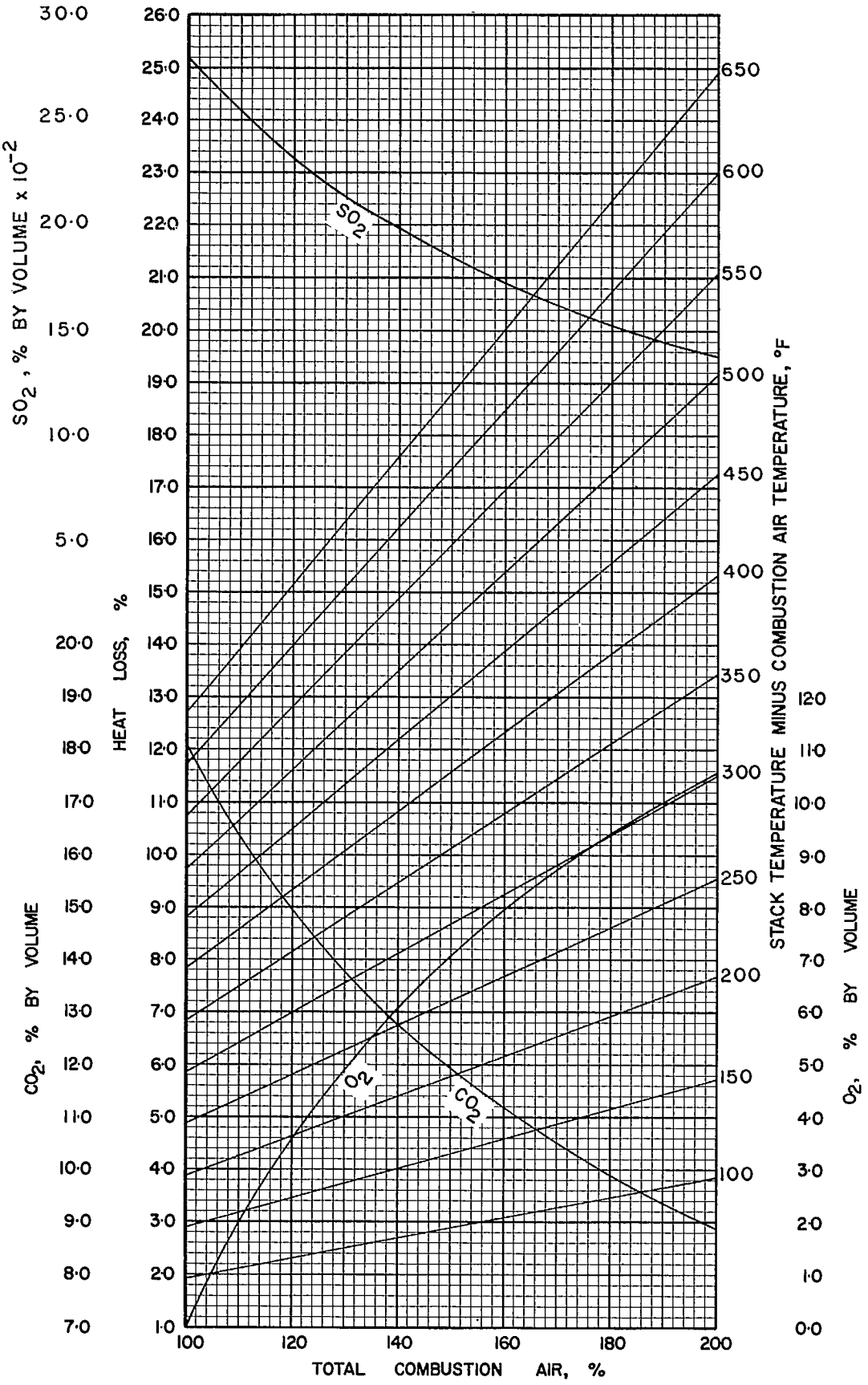


FIGURE 2· COMBUSTION DATA, VOLUME BASIS

US·0·3



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US·0·3

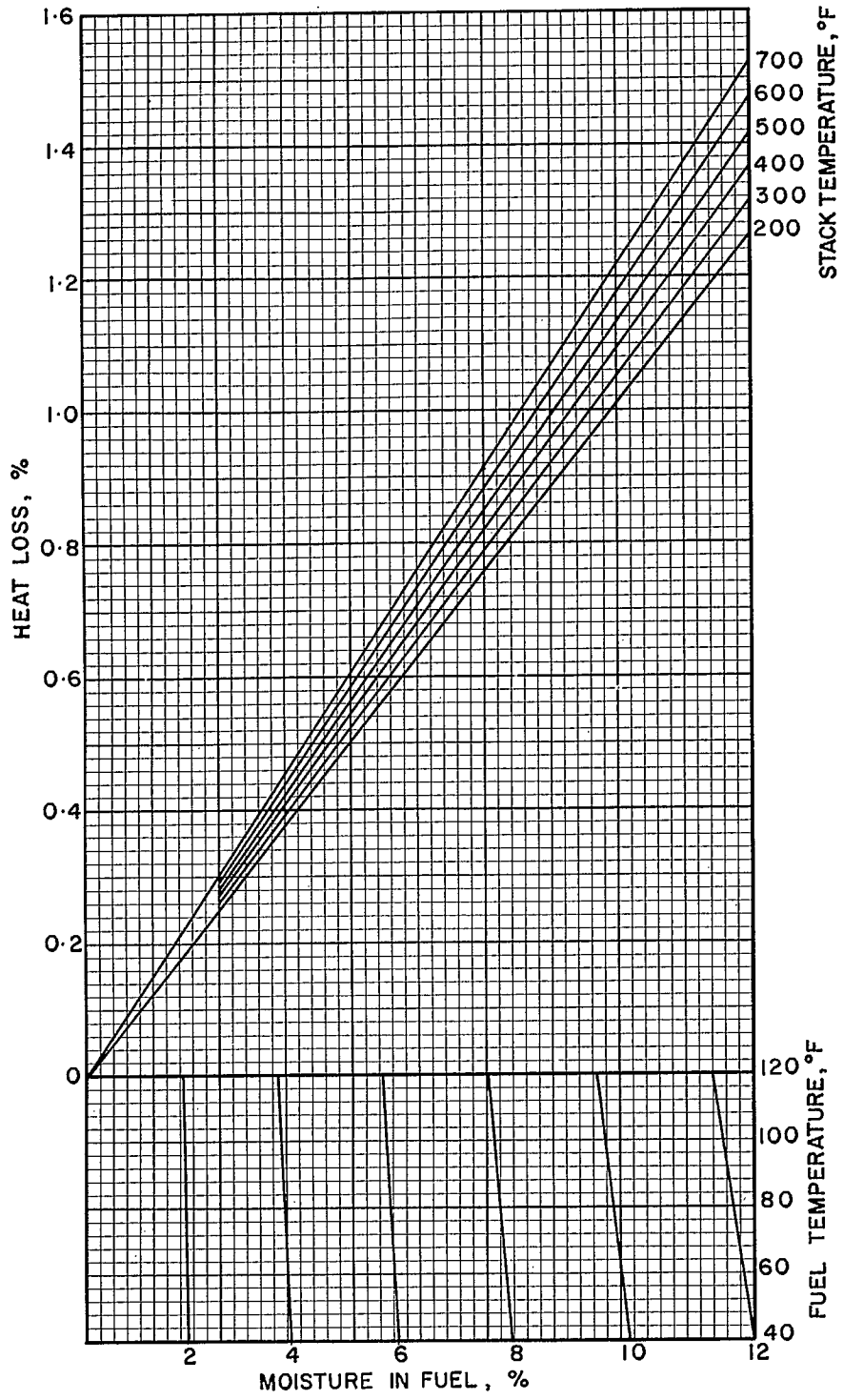
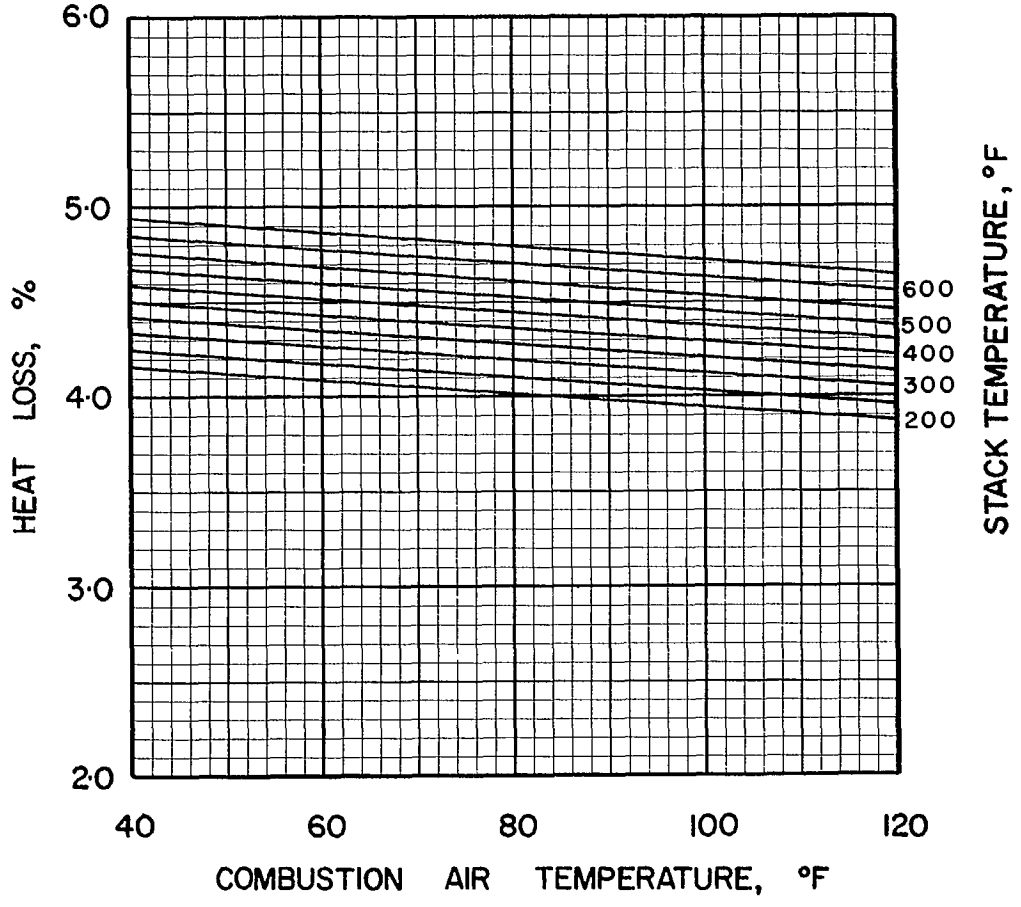


FIGURE 4· HEAT LOSS DUE TO MOISTURE IN COAL

US·0·3



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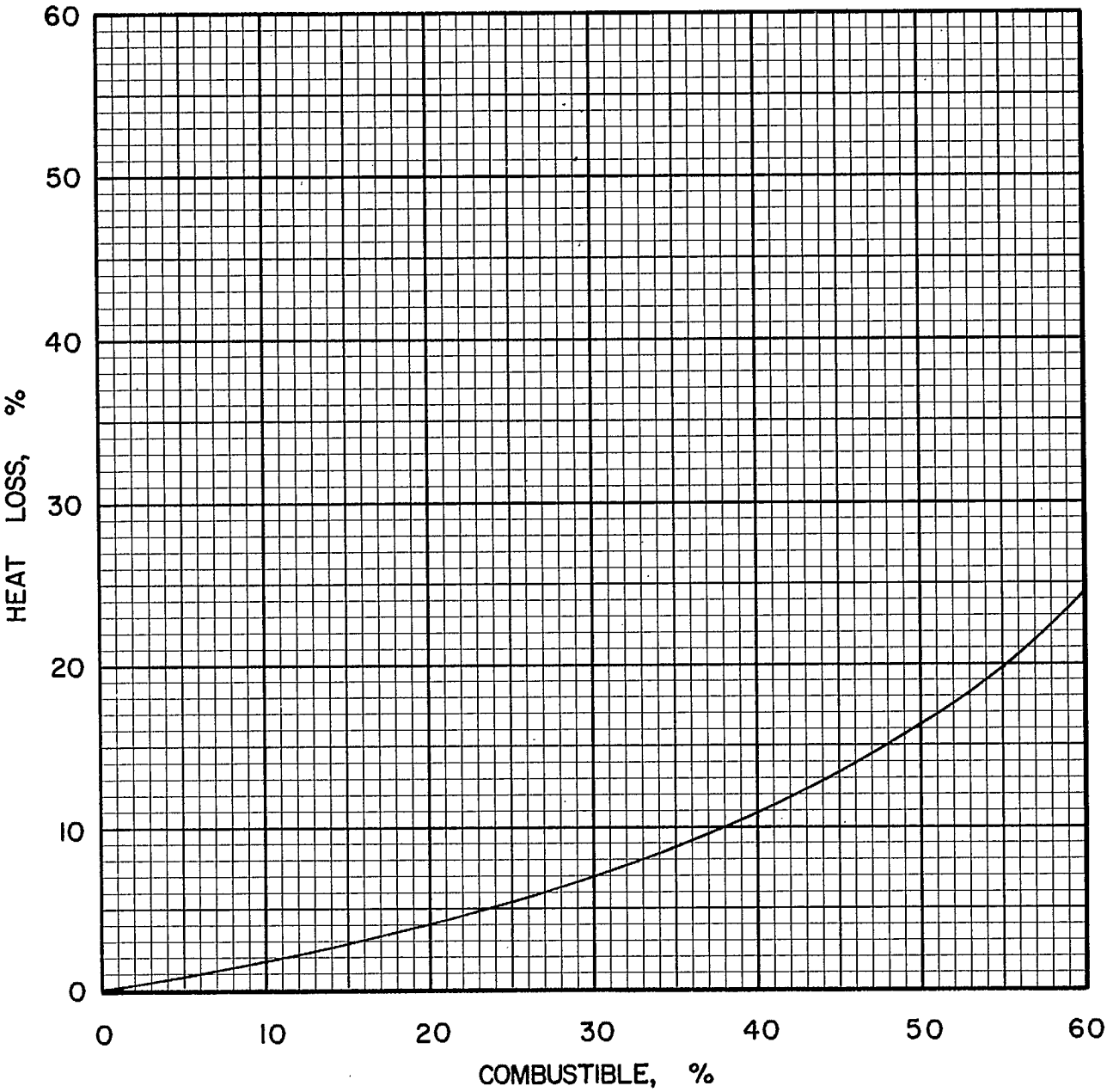
US·0·3



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US·0·3

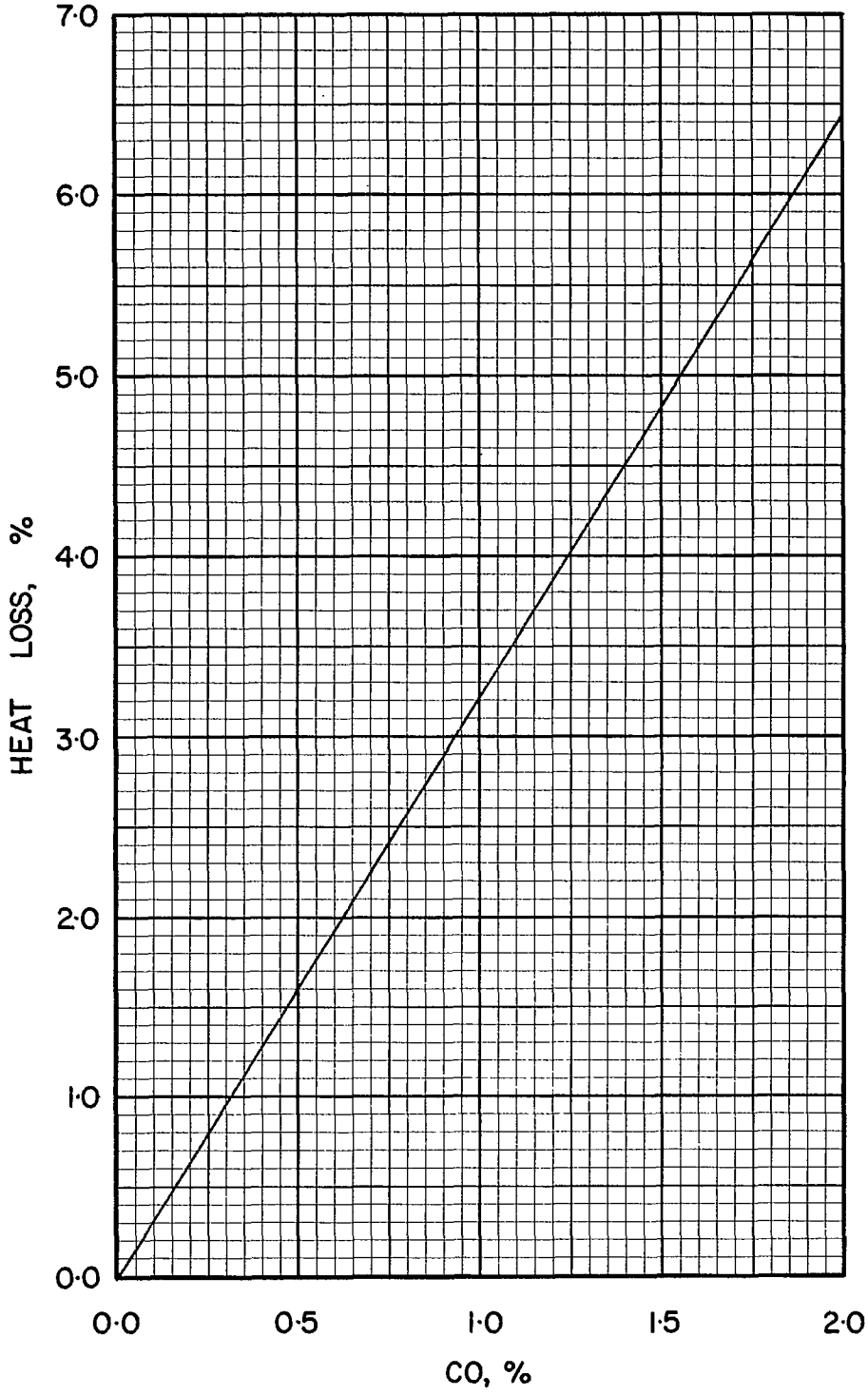

FIGURE 7 · HEAT LOSS FOR A RANGE OF CO CONCENTRATIONS, ASSUMING NEGLIGIBLE EXCESS AIR

US·0·3

COAL US 0-4, ZANESVILLE, MUSKINGUM COUNTY

Typical Moisture Range: 6–12%

Proximate Analysis (lb/lb dry coal)

Ash	0.141
Volatile Matter	0.389
Fixed Carbon	0.470
Total	1.000

Ultimate Analysis (lb/lb dry coal)

Carbon (C)	0.685
Hydrogen (H)	0.045
Sulphur (S)	0.041
Nitrogen (N)	0.014
Oxygen (O)	0.074
Ash	0.141
Total	1.000

Gross Calorific Value

Btu/lb:	11958
Btu/short ton:	23.92×10^6
Btu/long ton:	26.79×10^6
MJ/kg:	27.81

Conversion Factors

1 short ton = 0.8929 long tons = 2000 lb
10^6 Btu = 83.63 lb
10^6 Btu = 0.04181 short tons
10^6 Btu = 0.03733 long tons

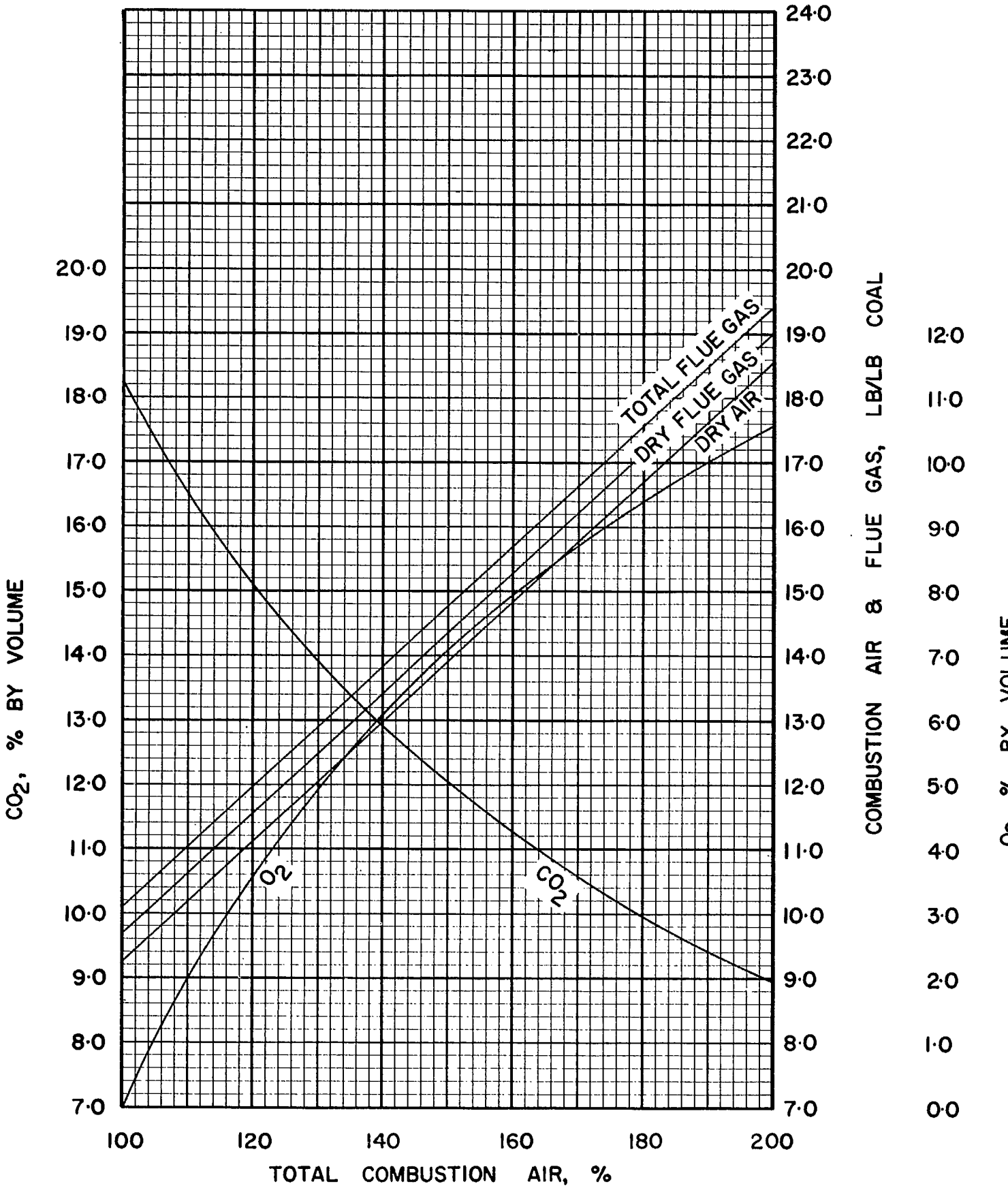

FIGURE 1· COMBUSTION DATA, WEIGHT BASIS

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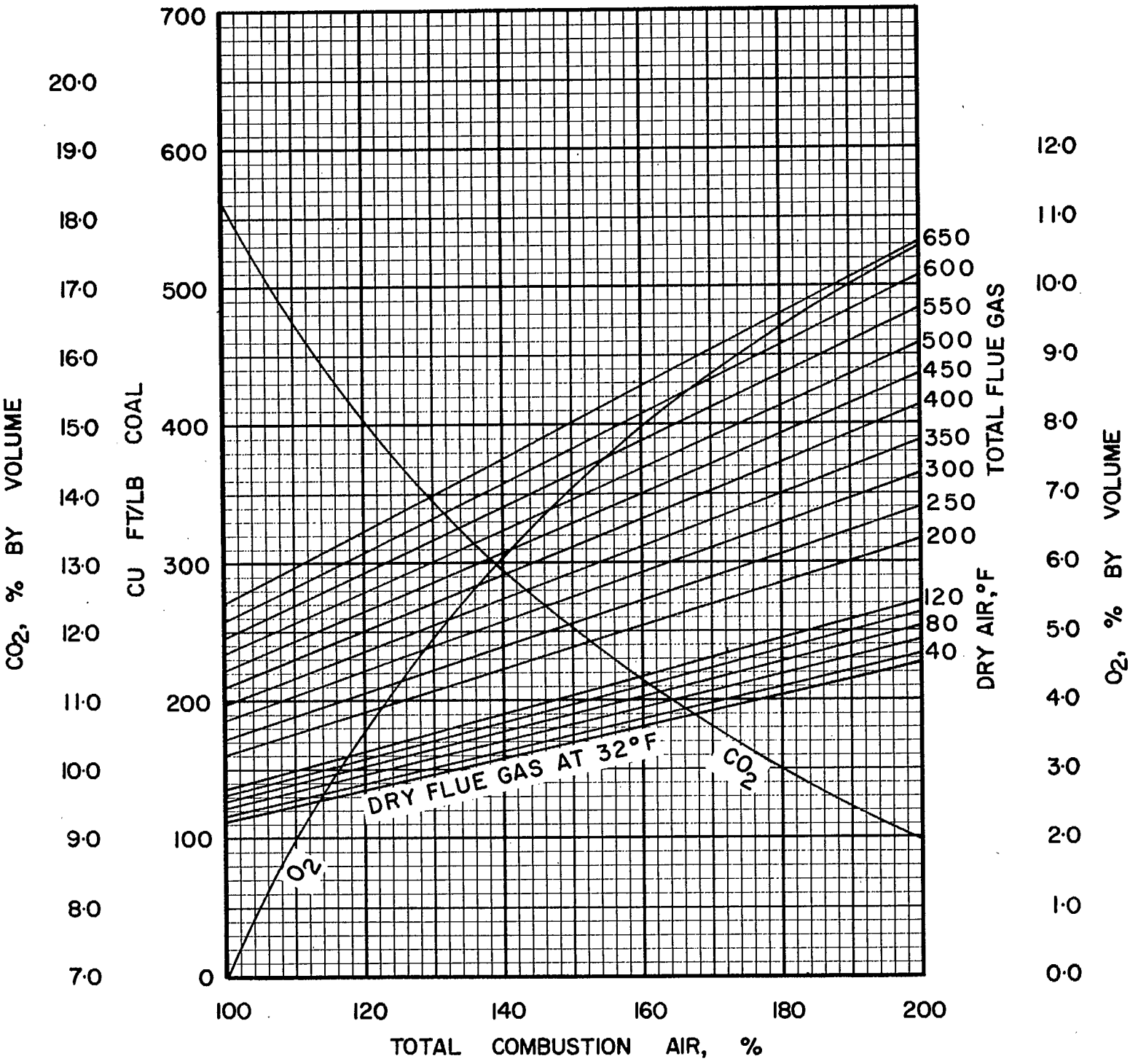

FIGURE 2· COMBUSTION DATA, VOLUME BASIS

US·0·4

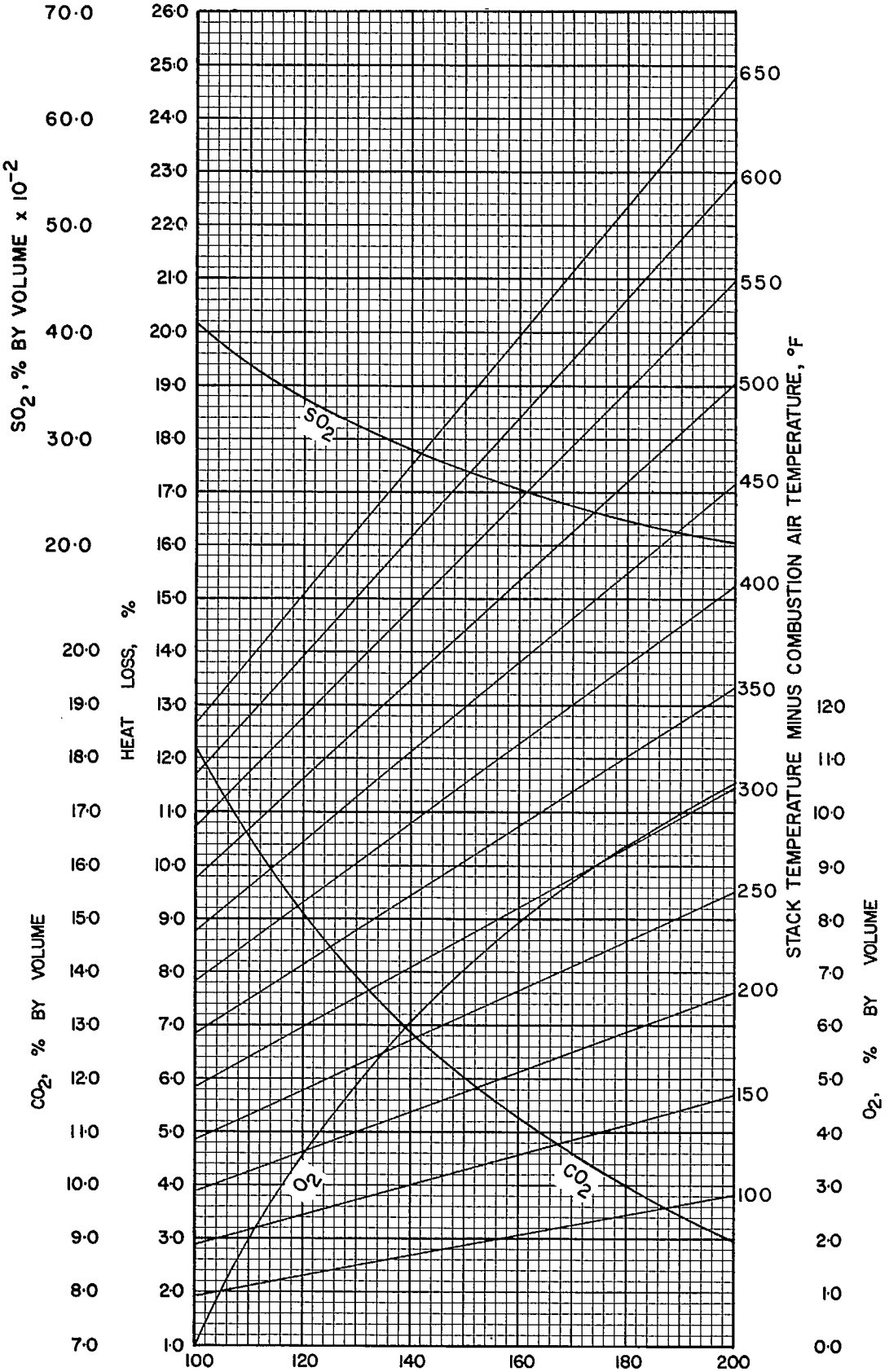

FIGURE 3· DRY FLUE GAS LOSS FOR A RANGE OF TEMPERATURE DIFFERENTIALS

US·0·4

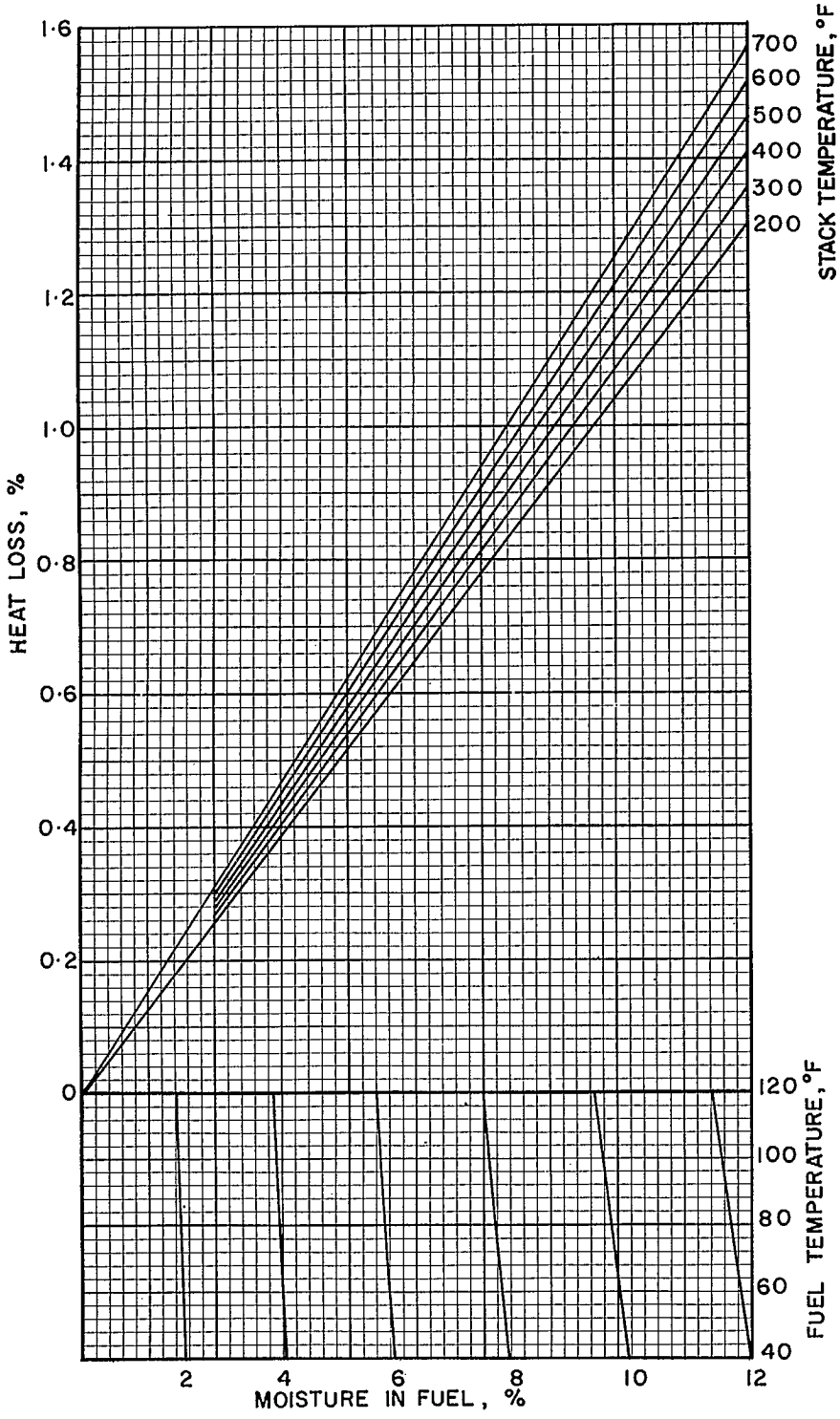

FIGURE 4· HEAT LOSS DUE TO MOISTURE IN COAL

US·0·4

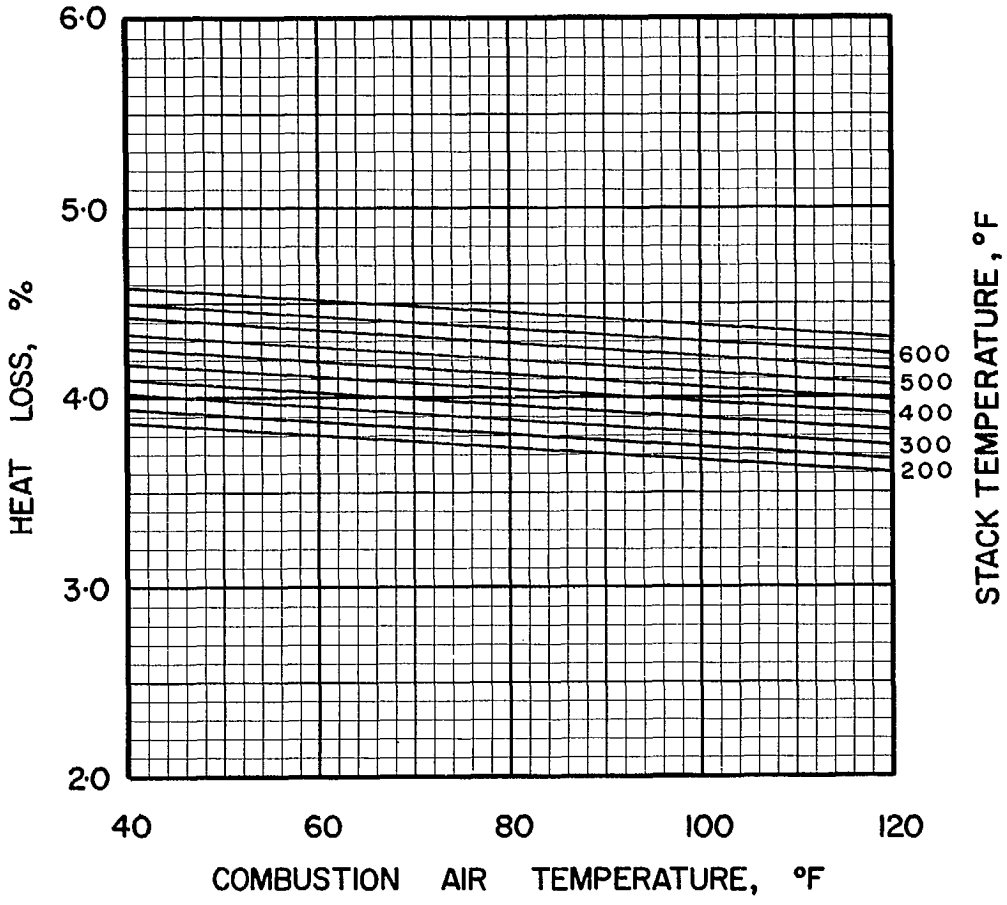

FIGURE 5· HYDROGEN LOSS FOR A RANGE OF STACK TEMPERATURES

US·0·4

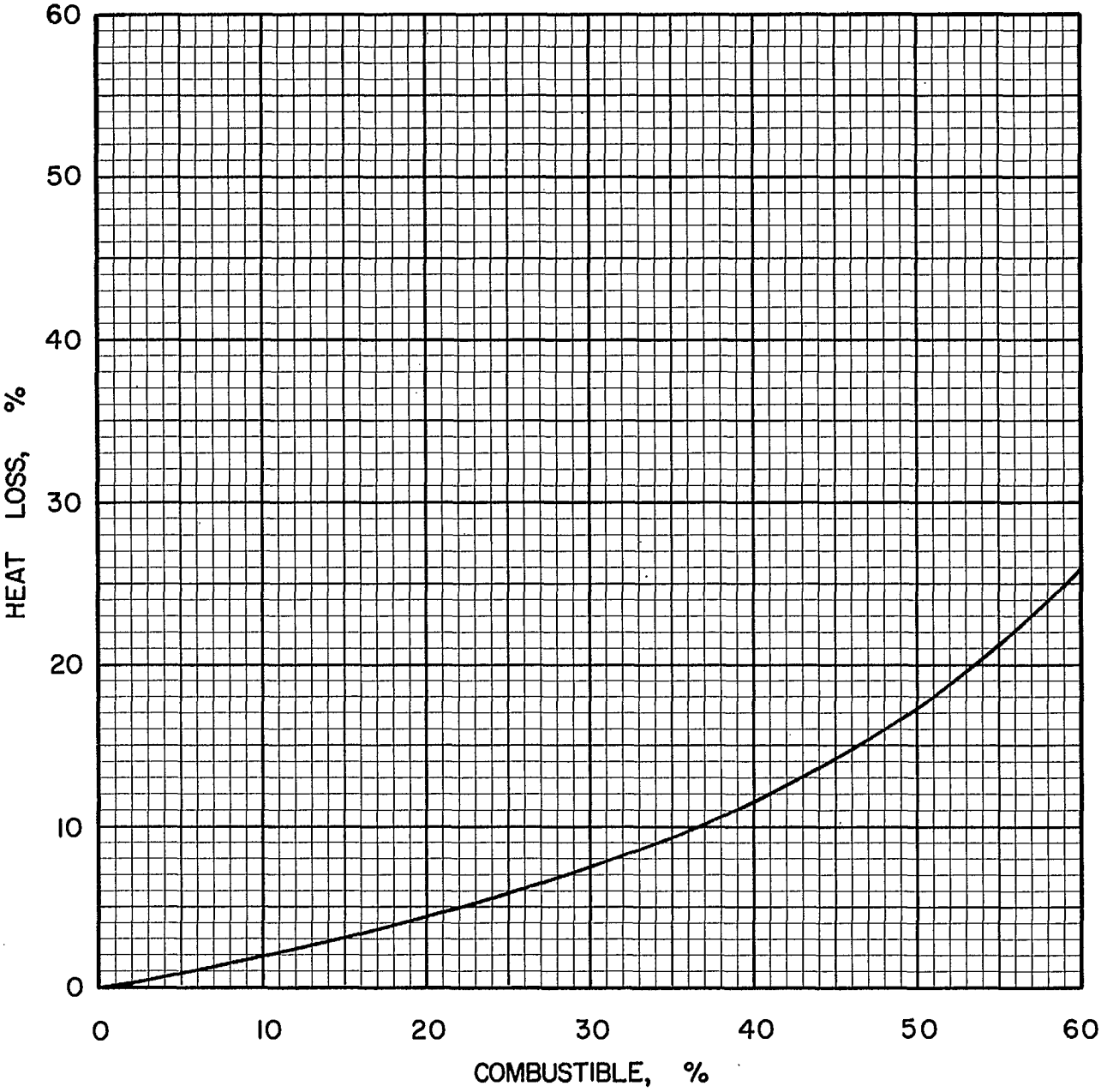

FIGURE 6 HEAT LOSS FOR A RANGE OF COMBUSTIBLE CONCENTRATIONS IN REFUSE

US·0·4

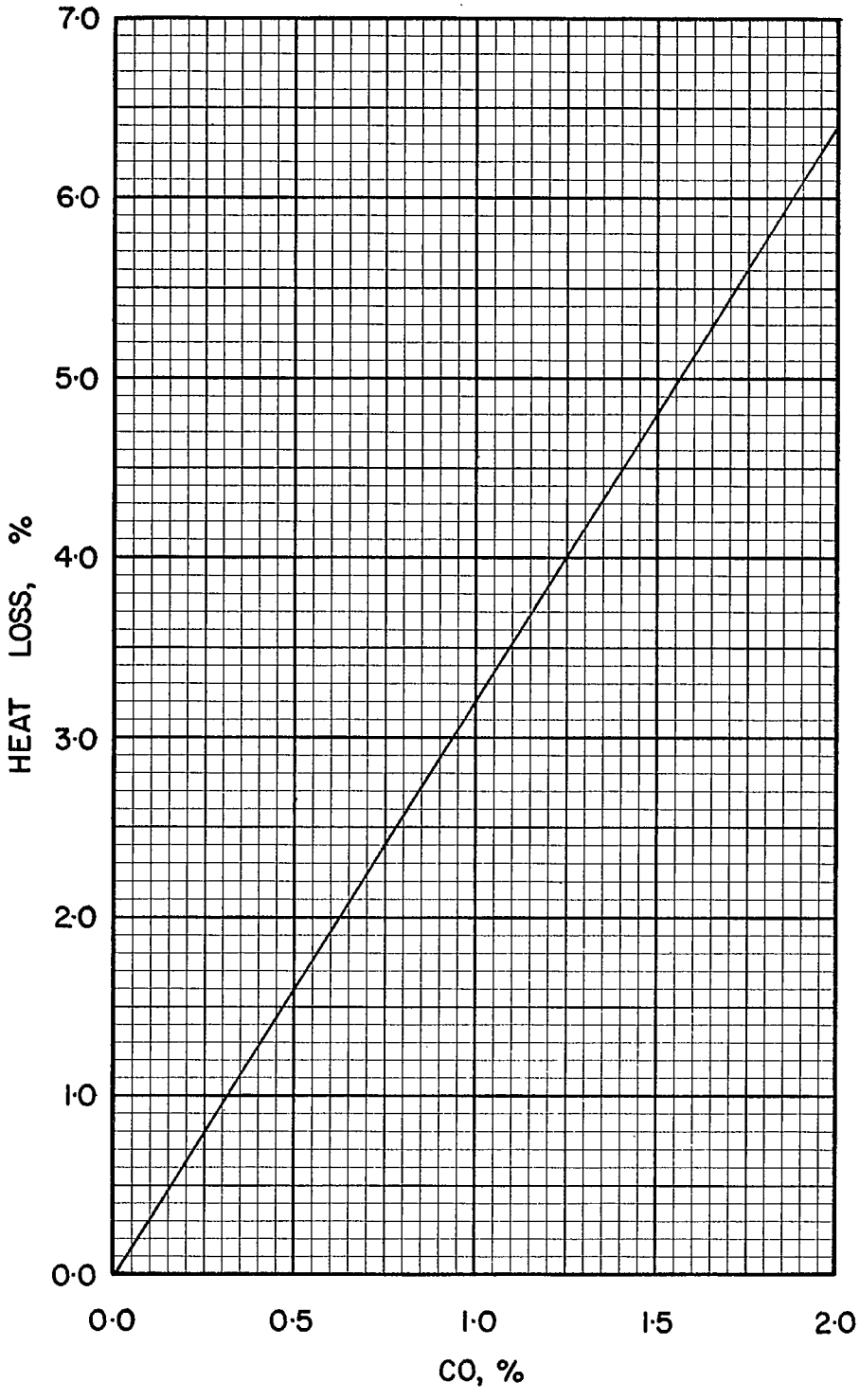

FIGURE 7 · HEAT LOSS FOR A RANGE OF CO CONCENTRATIONS, ASSUMING NEGLIGIBLE EXCESS AIR

US·0·4

COAL US P-1, CADOGAN

Typical Moisture Range: 0–6%

Proximate Analysis (lb/lb dry coal)

Ash	0.080
Volatile Matter	0.365
Fixed Carbon	0.555
Total	1.000

Ultimate Analysis (lb/lb dry coal)

Carbon (C)	0.769
Hydrogen (H)	0.055
Sulphur (S)	0.019
Nitrogen (N)	0.014
Oxygen (O)	0.063
Ash	0.080
Total	1.000

Gross Calorific Value

Btu/lb:	13886
Btu/short ton:	27.77×10^6
Btu/long ton:	31.10×10^6
MJ/kg:	32.29

Conversion Factors

1 short ton = 0.8929 long tons = 2000 lb
10^6 Btu = 72.01 lb
10^6 Btu = 0.03601 short tons
10^6 Btu = 0.03215 long tons

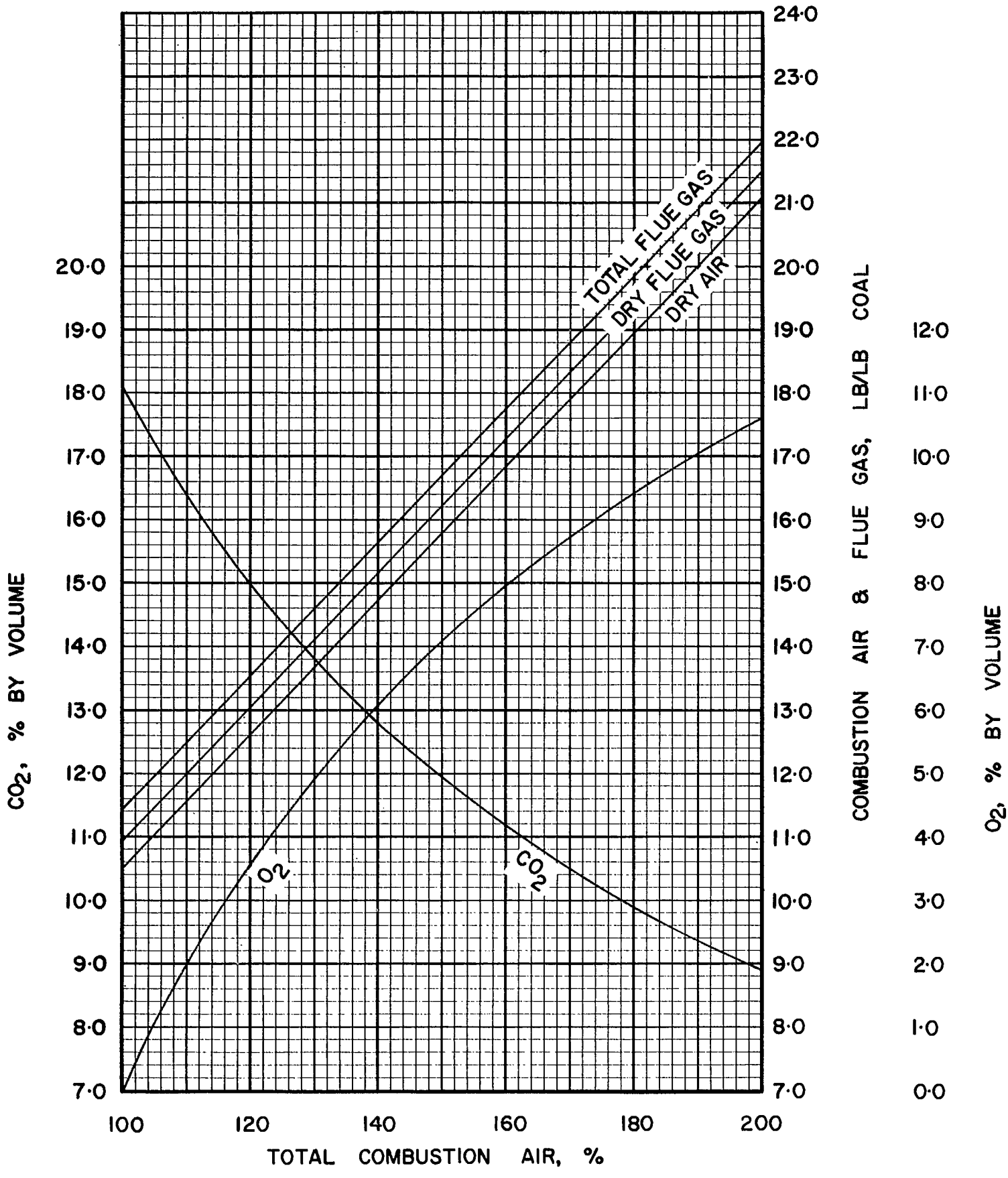

FIGURE 1· COMBUSTION DATA, WEIGHT BASIS

US·P·1

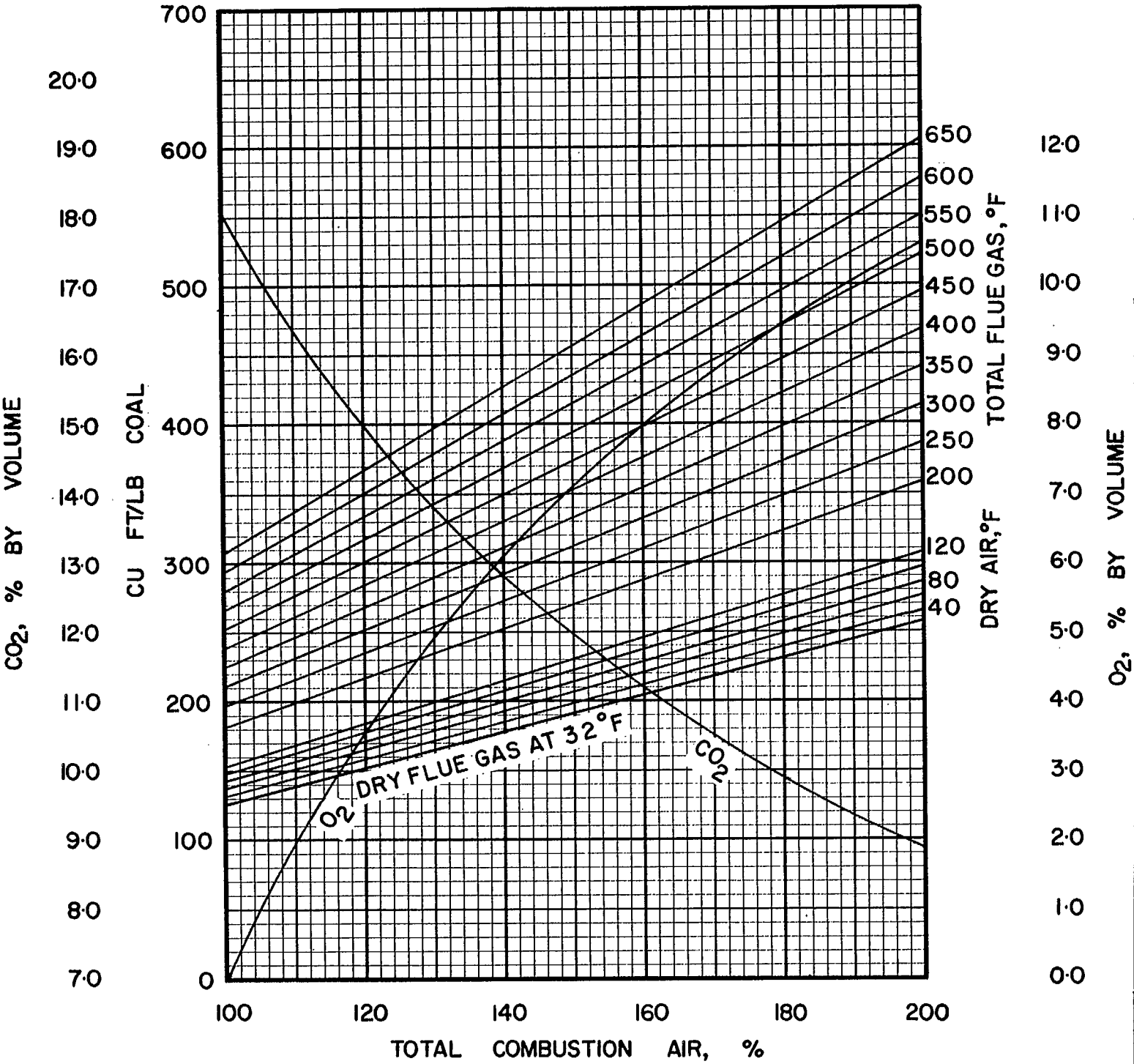

FIGURE 2· COMBUSTION ·DATA, VOLUME BASIS

US·P·I

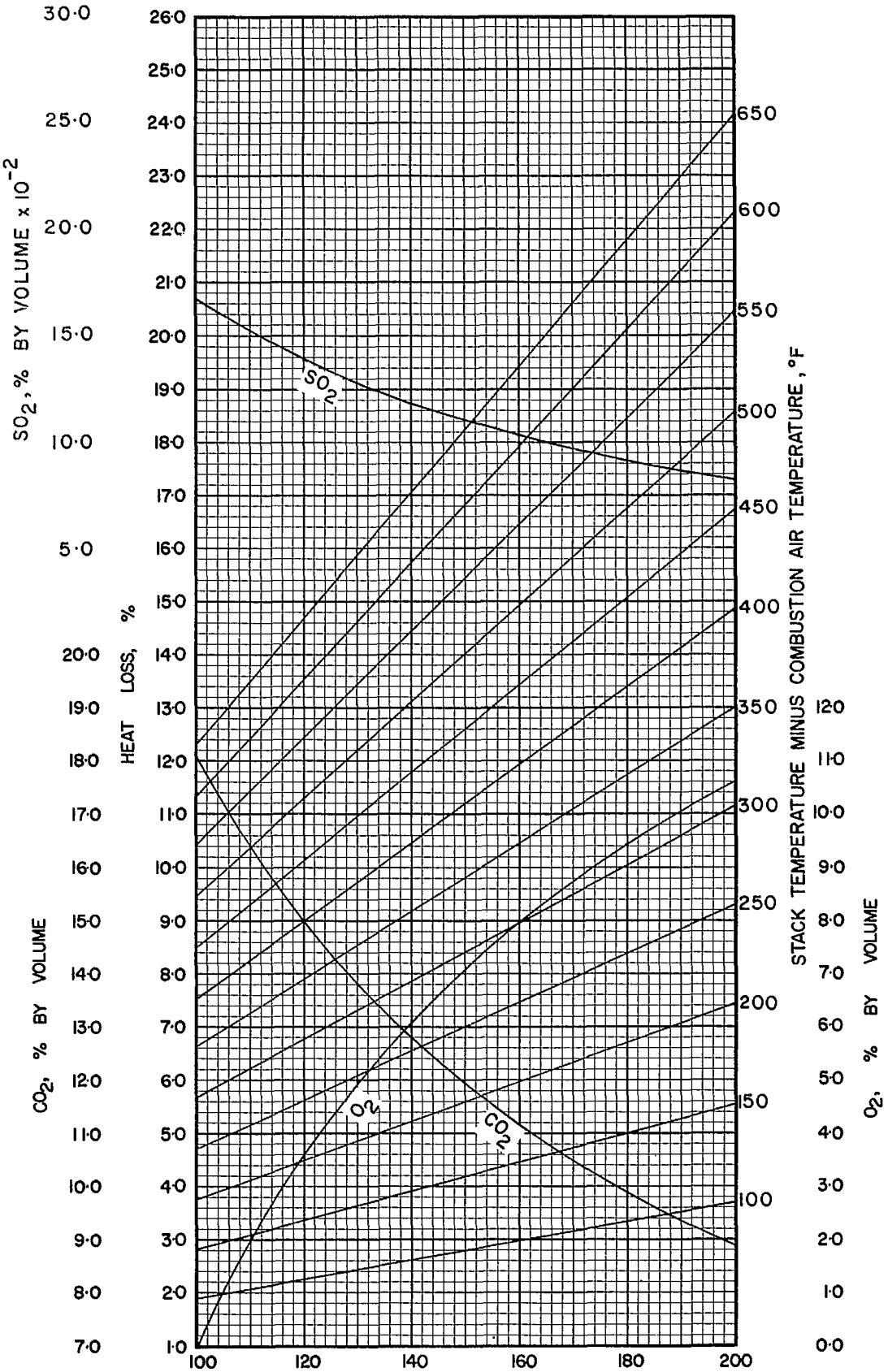

FIGURE 3· DRY FLUE GAS LOSS FOR A RANGE OF TEMPERATURE DIFFERENTIALS

US·P·1

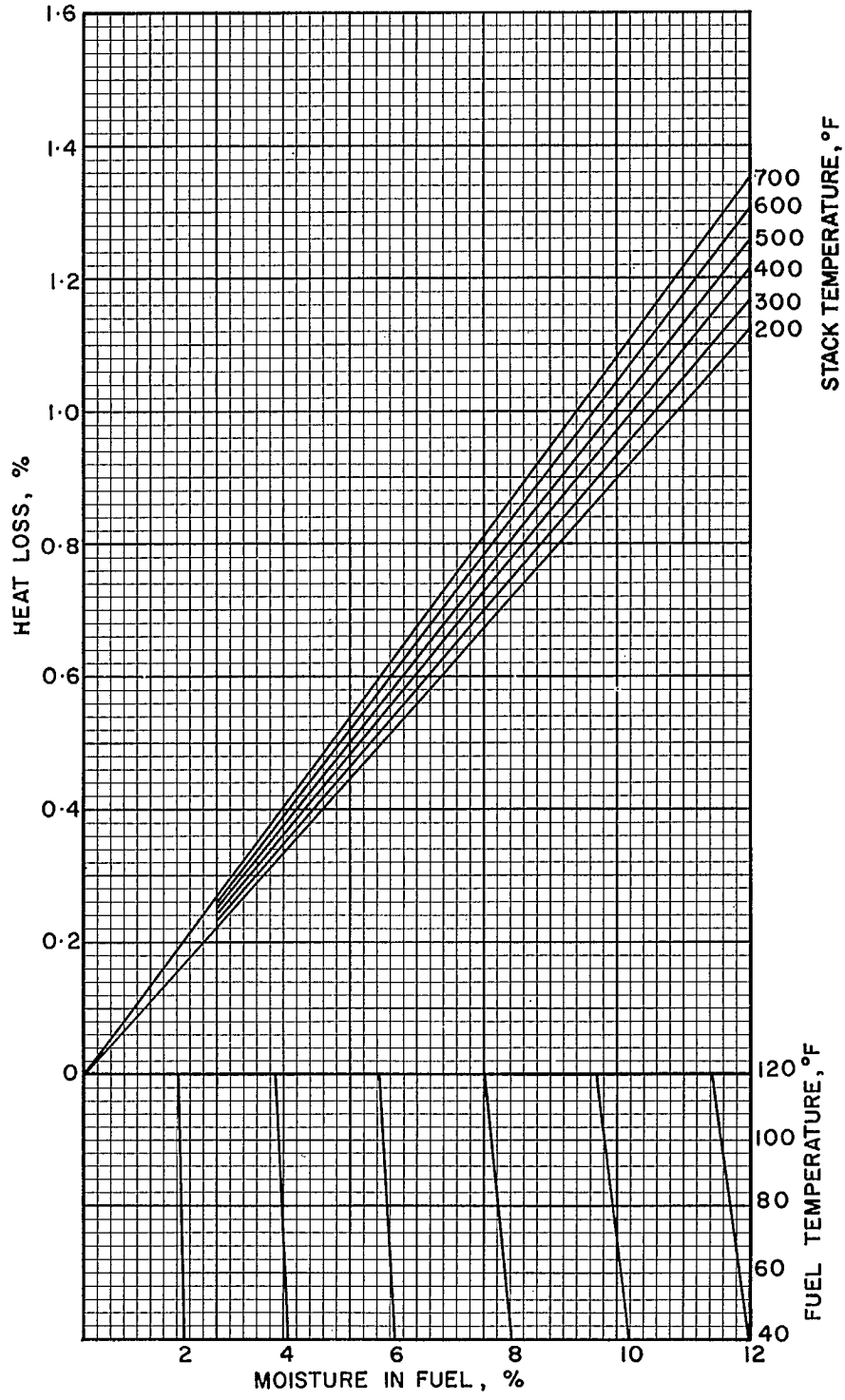

FIGURE 4· HEAT LOSS DUE TO MOISTURE IN COAL

US·P·I

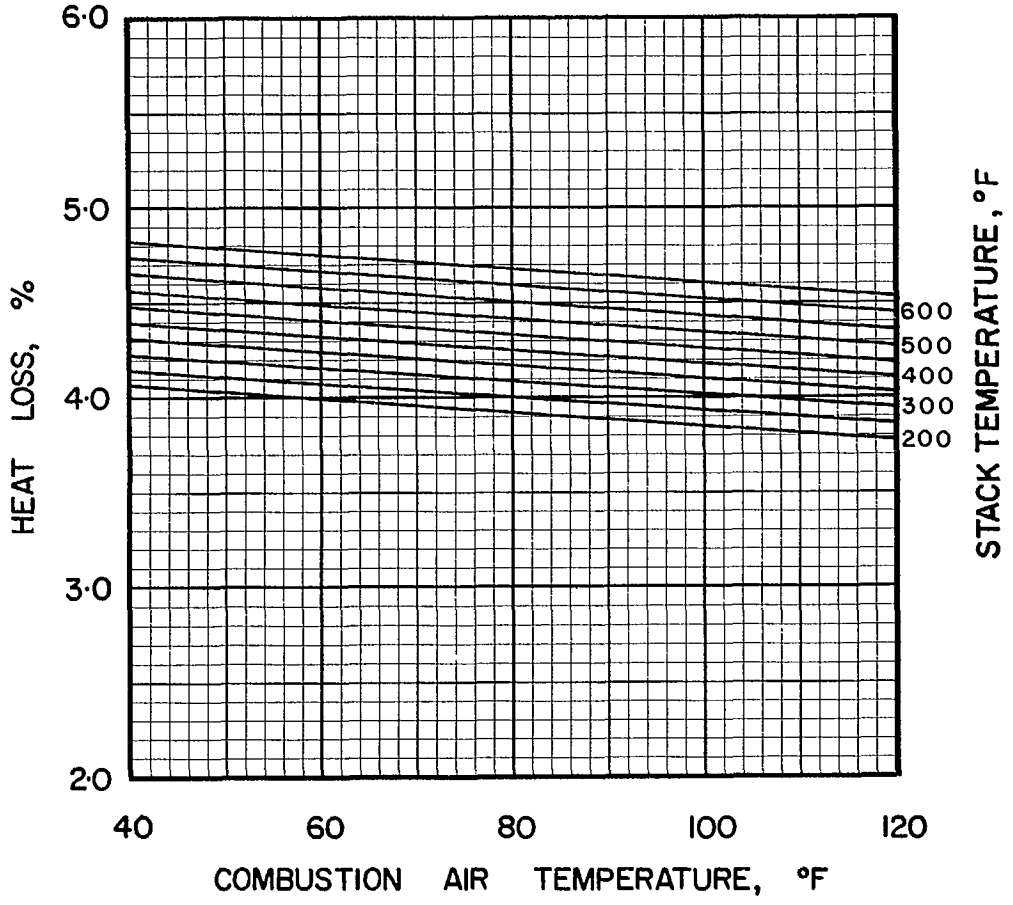

FIGURE 5· HYDROGEN LOSS FOR A RANGE OF STACK TEMPERATURES

US·P·I

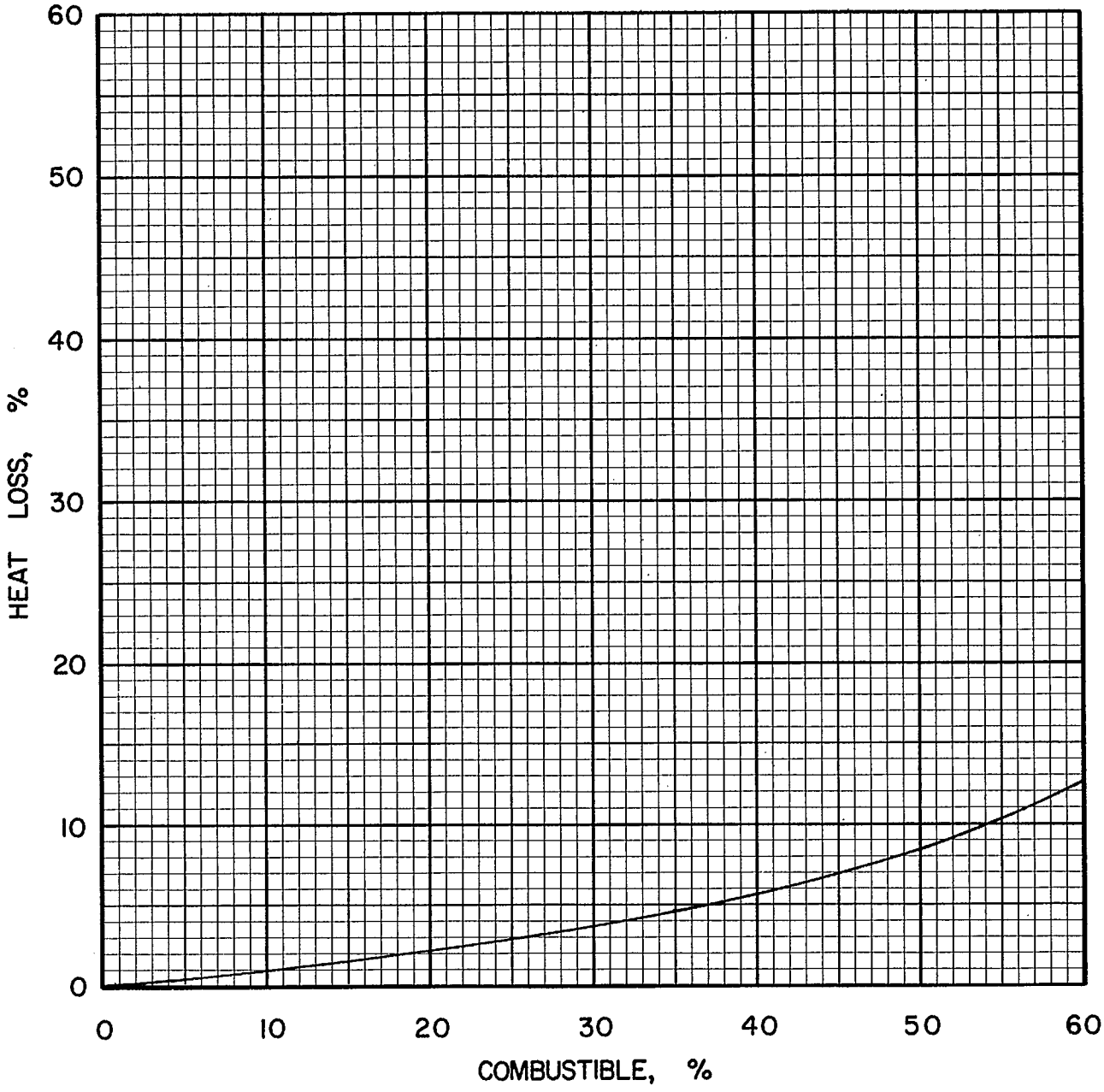

FIGURE 6 HEAT LOSS FOR A RANGE OF COMBUSTIBLE CONCENTRATIONS IN REFUSE

US·P·I

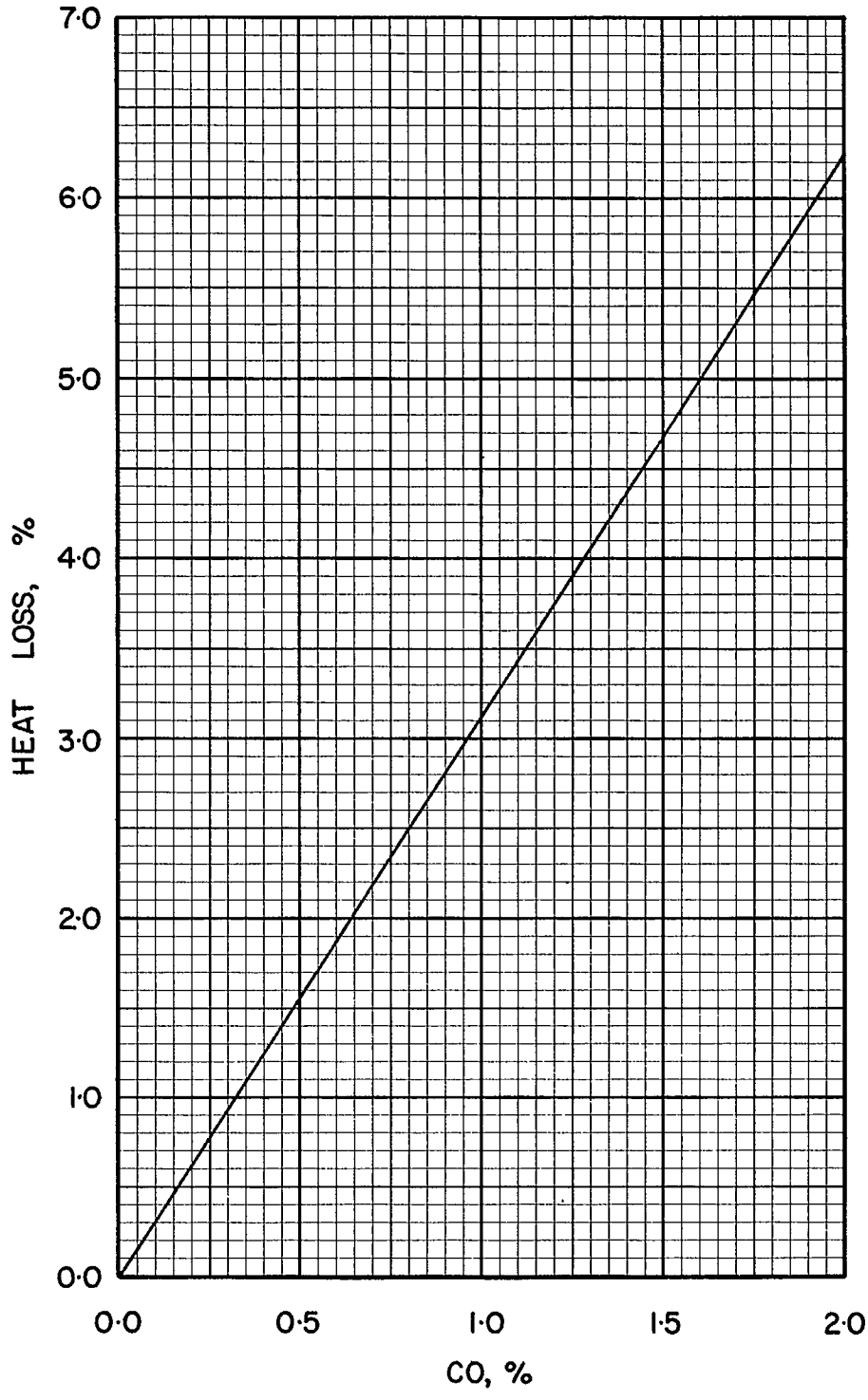

FIGURE 7 · HEAT LOSS FOR A RANGE OF CO CONCENTRATIONS, ASSUMING NEGLIGIBLE EXCESS AIR

US·P·I

COAL US P-2, CALLAGHAN, JEFFERSON COUNTY, UPPER FREEPORT SEAM

Typical Moisture Range: 4–10%

Proximate Analysis (lb/lb dry coal)

Ash	0.119
Volatile Matter	0.340
Fixed Carbon	0.541
Total	1.000

Ultimate Analysis (lb/lb dry coal)

Carbon (C)	0.740
Hydrogen (H)	0.049
Sulphur (S)	0.016
Nitrogen (N)	0.016
Oxygen (O)	0.060
Ash	0.119
Total	1.000

Gross Calorific Value

Btu/lb:	12920
Btu/short ton:	25.84×10^6
Btu/long ton:	28.94×10^6
MJ/kg:	30.04

Conversion Factors

1 short ton = 0.8929 long tons = 2000 lb
10^6 Btu = 77.40 lb
10^6 Btu = 0.03870 short tons
10^6 Btu = 0.03455 long tons

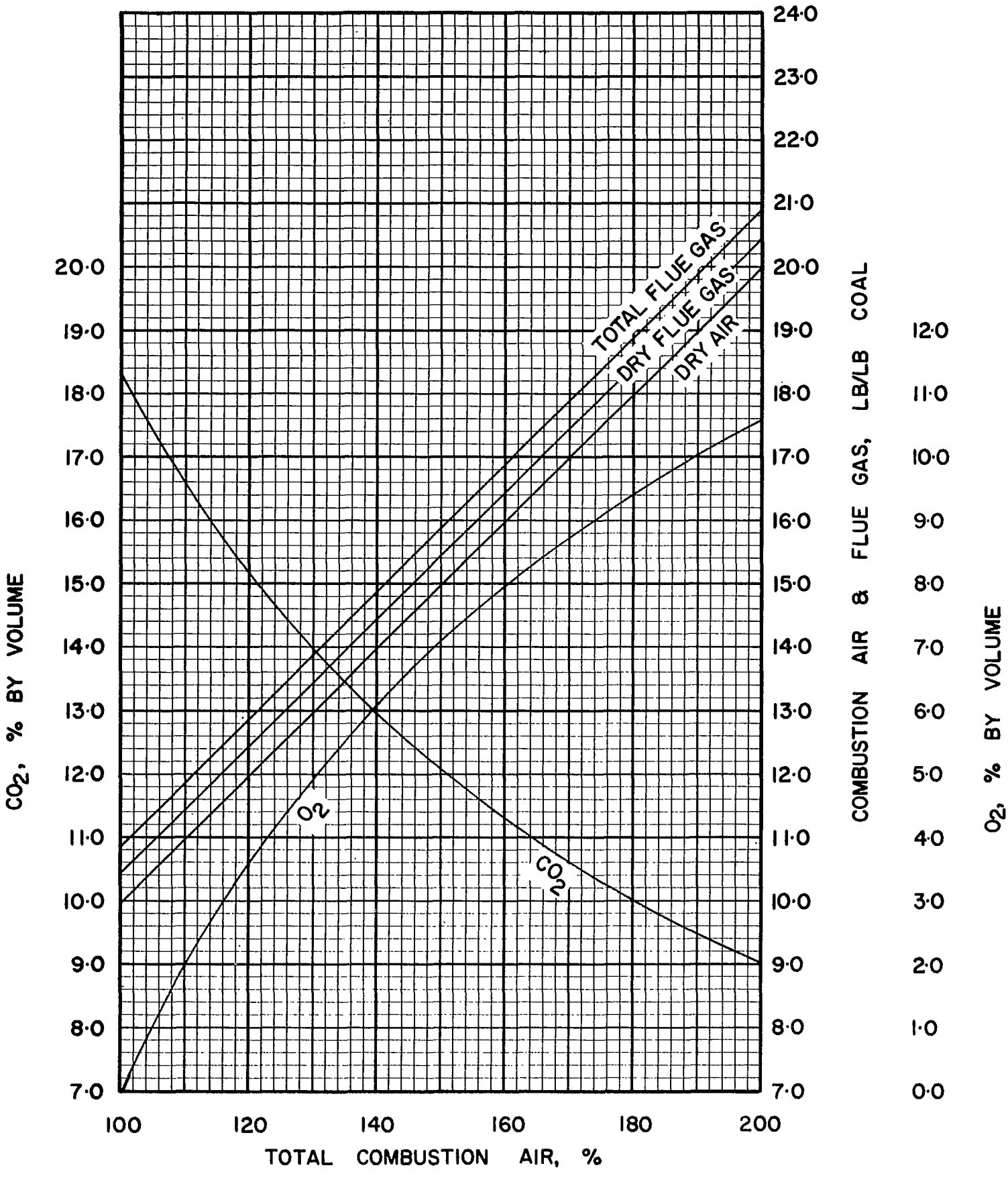

FIGURE 1· COMBUSTION DATA, WEIGHT BASIS

US·P·2

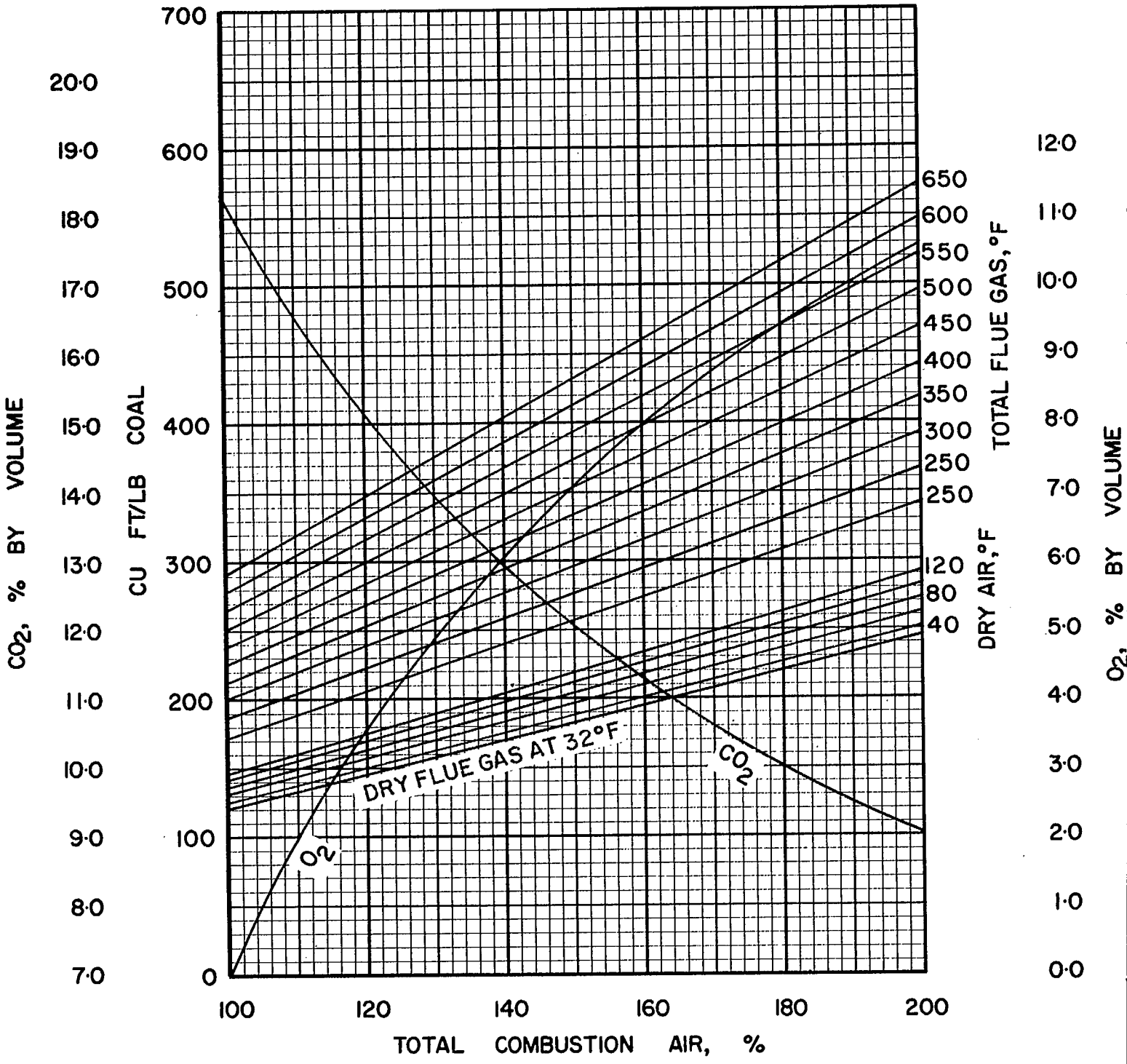

FIGURE 2· COMBUSTION DATA, VOLUME BASIS

US·P·2

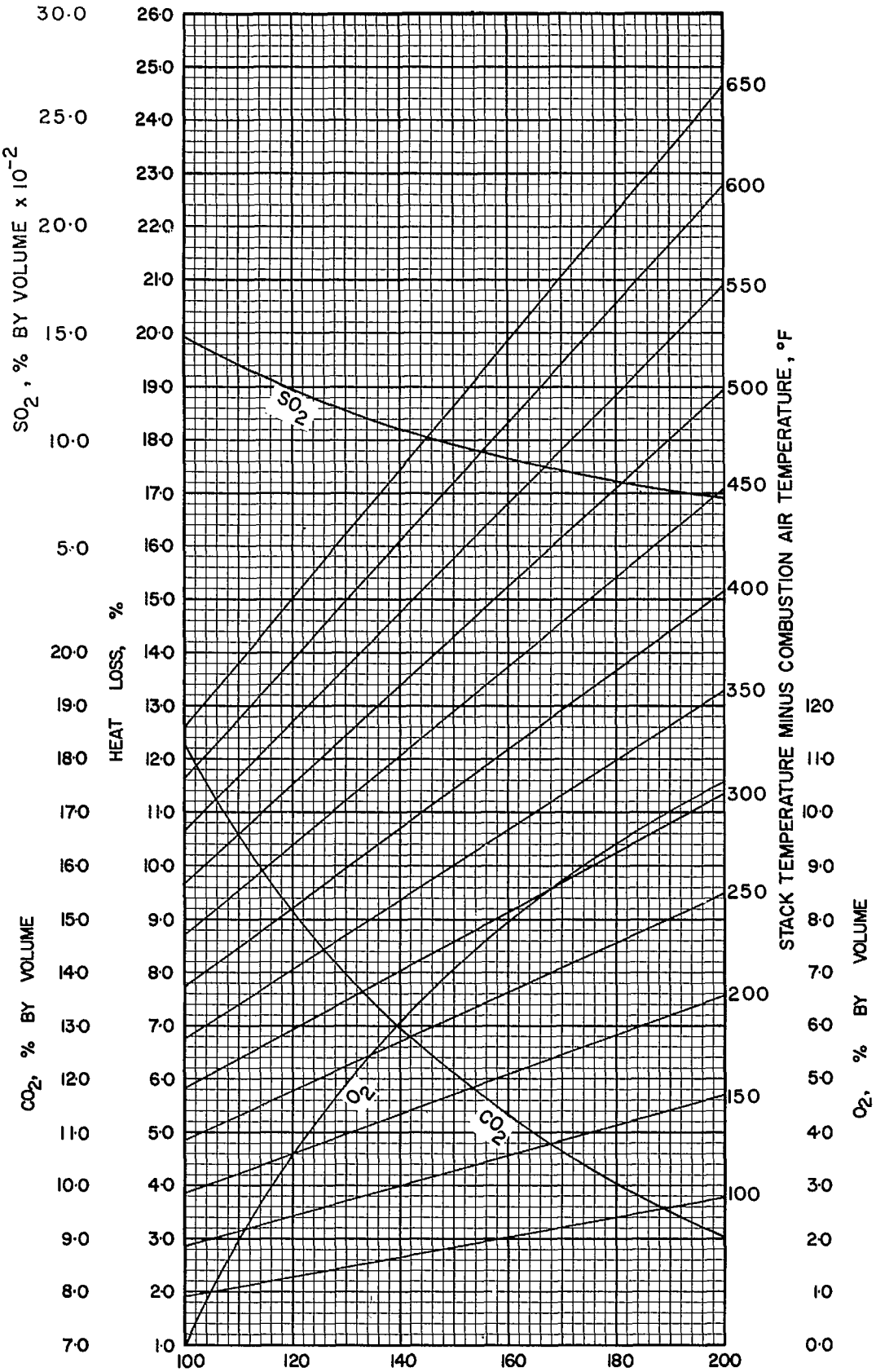

FIGURE 3· DRY FLUE GAS LOSS FOR A RANGE OF TEMPERATURE DIFFERENTIALS

US·P·2

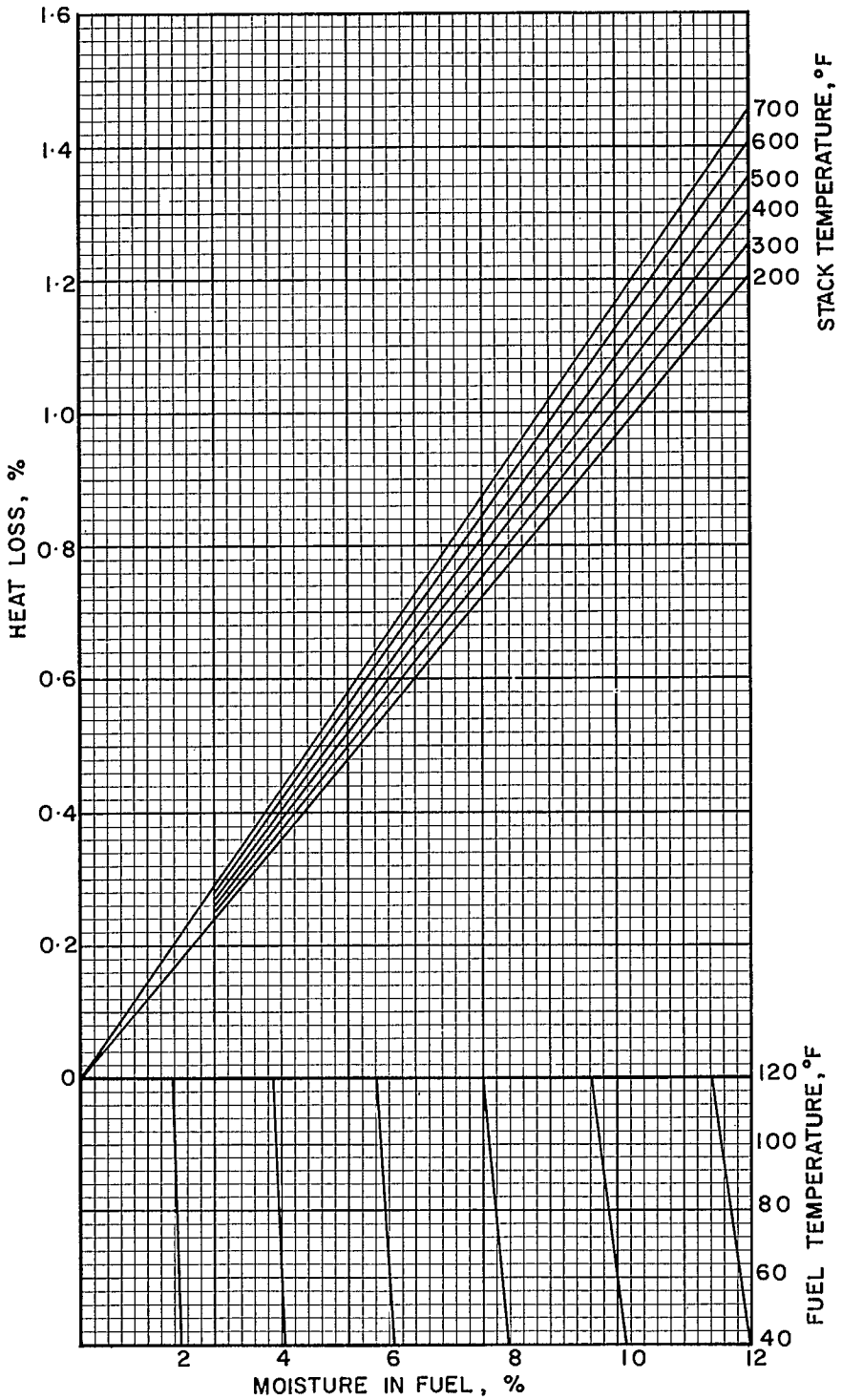

FIGURE 4· HEAT LOSS DUE TO MOISTURE IN COAL

US·P·2

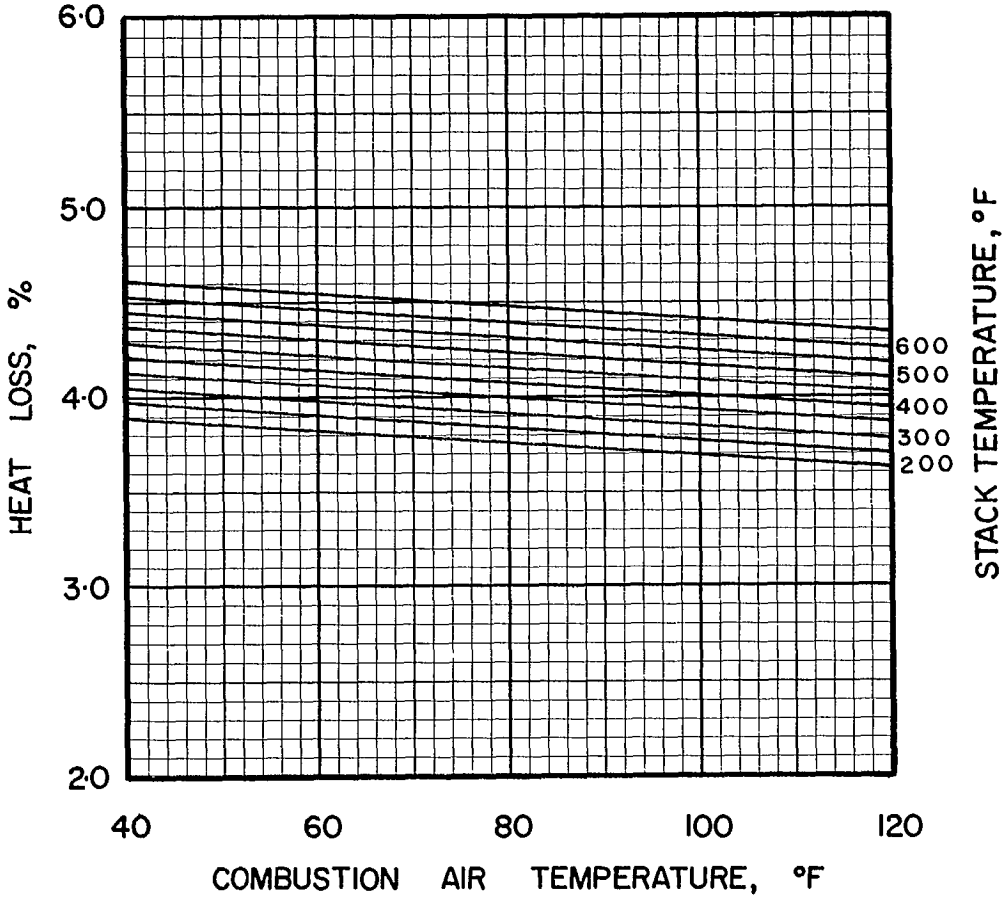

FIGURE 5· HYDROGEN LOSS FOR A RANGE OF STACK TEMPERATURES

US·P·2

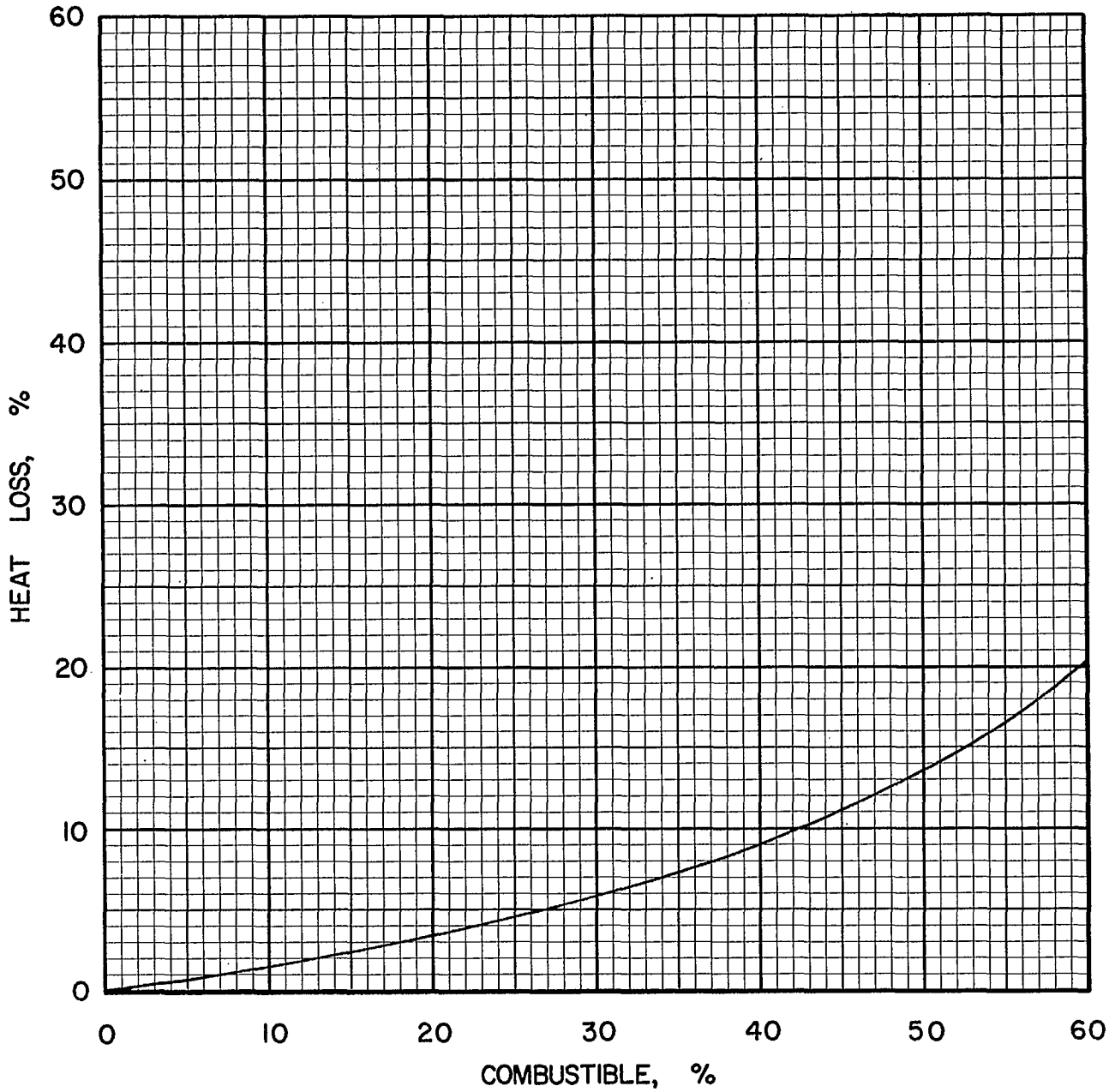

FIGURE 6 HEAT LOSS FOR A RANGE OF COMBUSTIBLE CONCENTRATIONS IN REFUSE

US·P·2

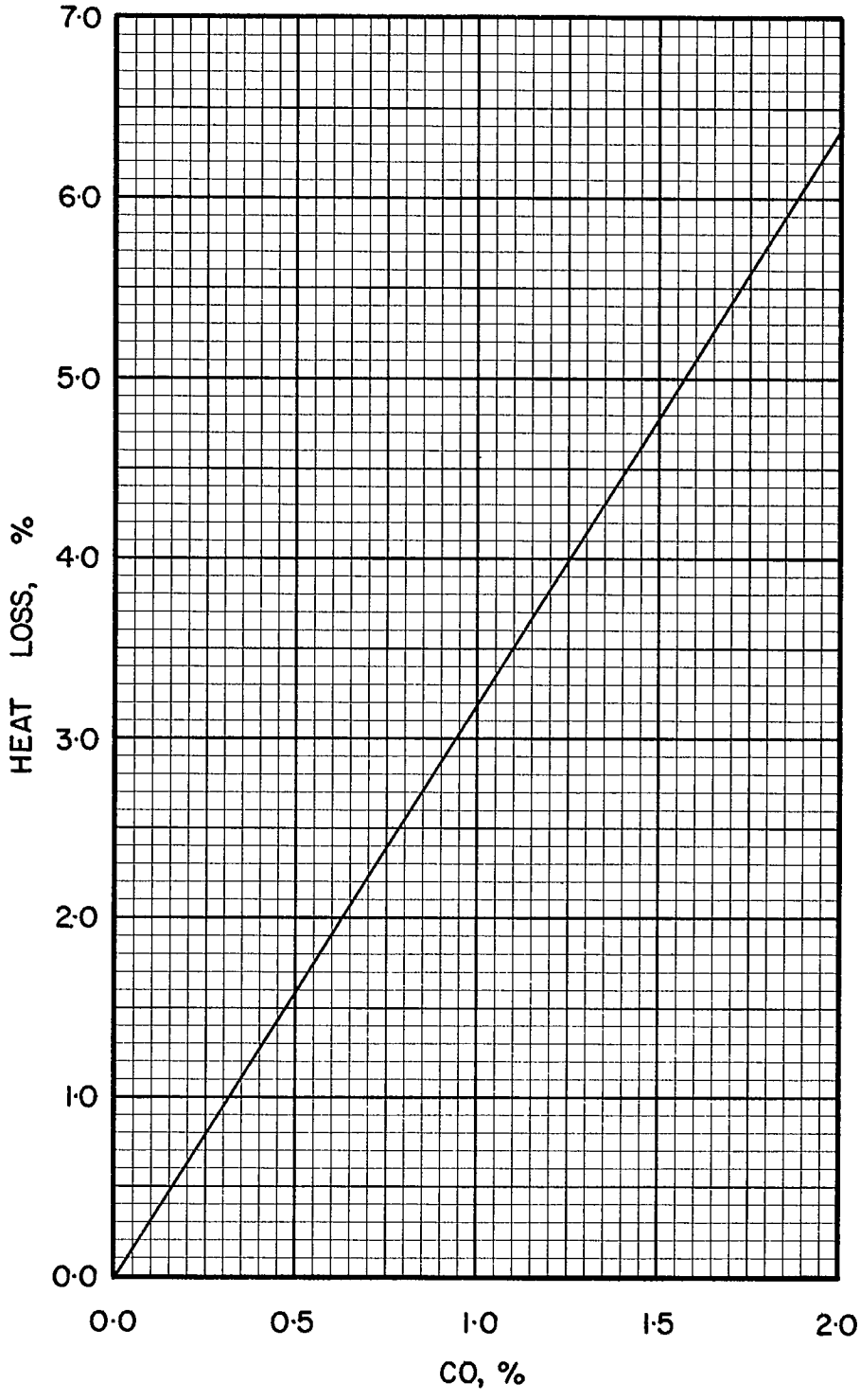

FIGURE 7 · HEAT LOSS FOR A RANGE OF CO CONCENTRATIONS, ASSUMING NEGLIGIBLE EXCESS AIR

US·P·2

COAL US P-3, CHAMPION

Typical Moisture Range: 0–8%

Proximate Analysis (lb/lb dry coal)

Ash	0.099
Volatile Matter	0.366
Fixed Carbon	0.535
Total	1.000

Ultimate Analysis (lb/lb dry coal)

Carbon (C)	0.748
Hydrogen (H)	0.051
Sulphur (S)	0.018
Nitrogen (N)	0.021
Oxygen (O)	0.063
Ash	0.099
Total	1.000

Gross Calorific Value

Btu/lb:	13498
Btu/short ton:	27.00×10^6
Btu/long ton:	30.24×10^6
MJ/kg:	31.39

Conversion Factors

1 short ton = 0.8929 long tons = 2000 lb
10^6 Btu = 74.09 lb
10^6 Btu = 0.03704 short tons
10^6 Btu = 0.03307 long tons

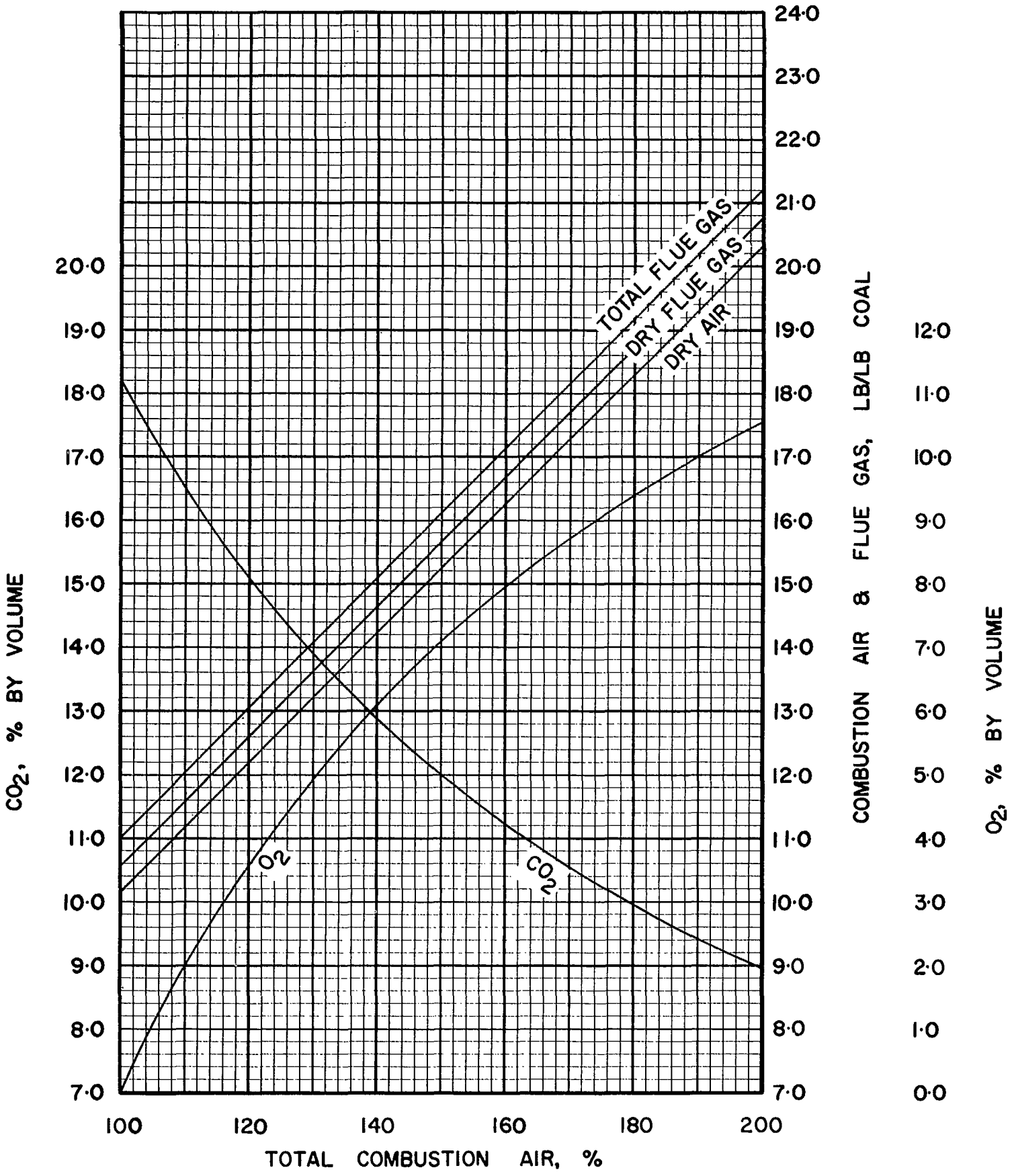

FIGURE 1· COMBUSTION DATA, WEIGHT BASIS US·P·3

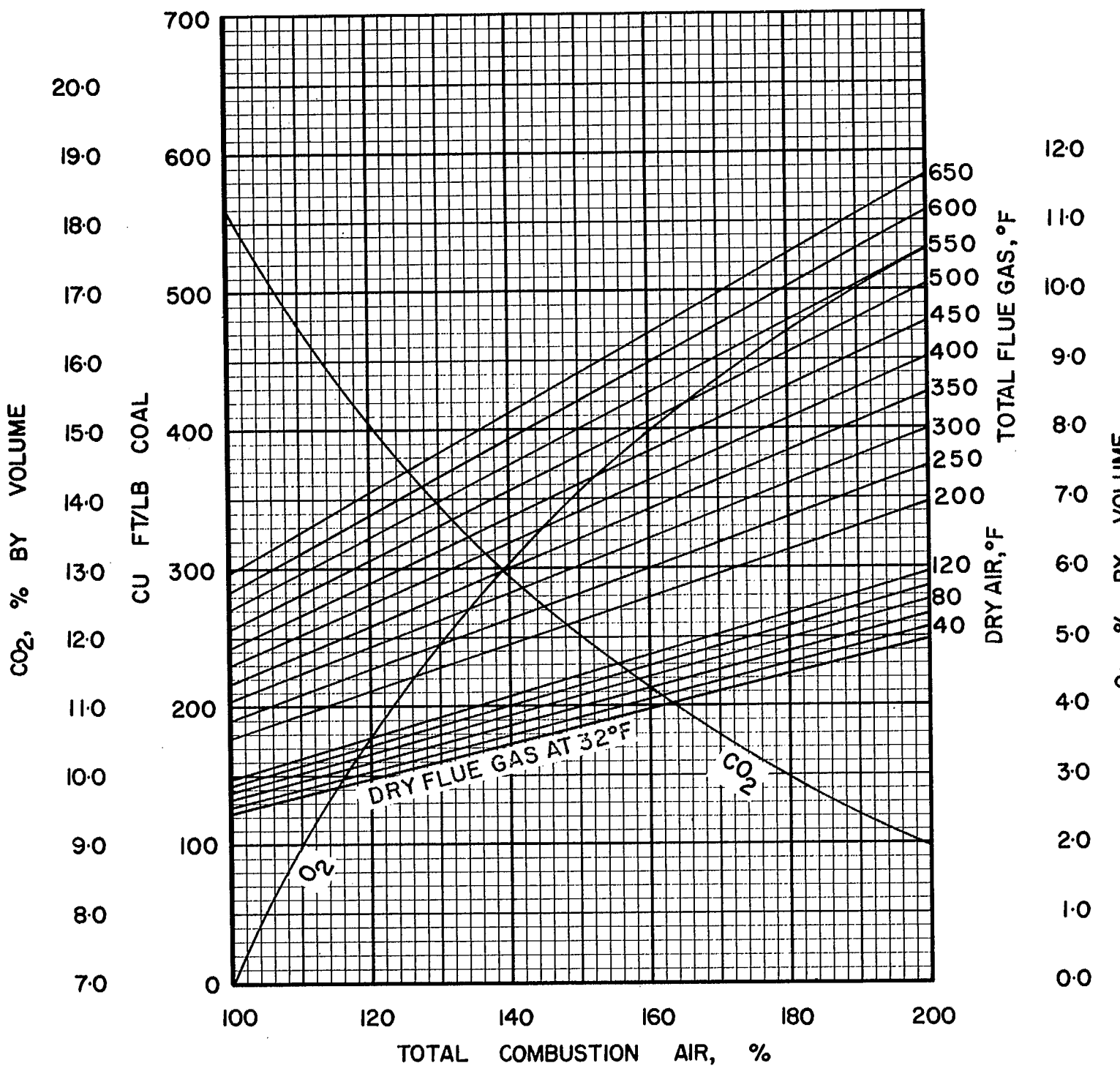

FIGURE 2· COMBUSTION DATA, VOLUME BASIS

US·P·3

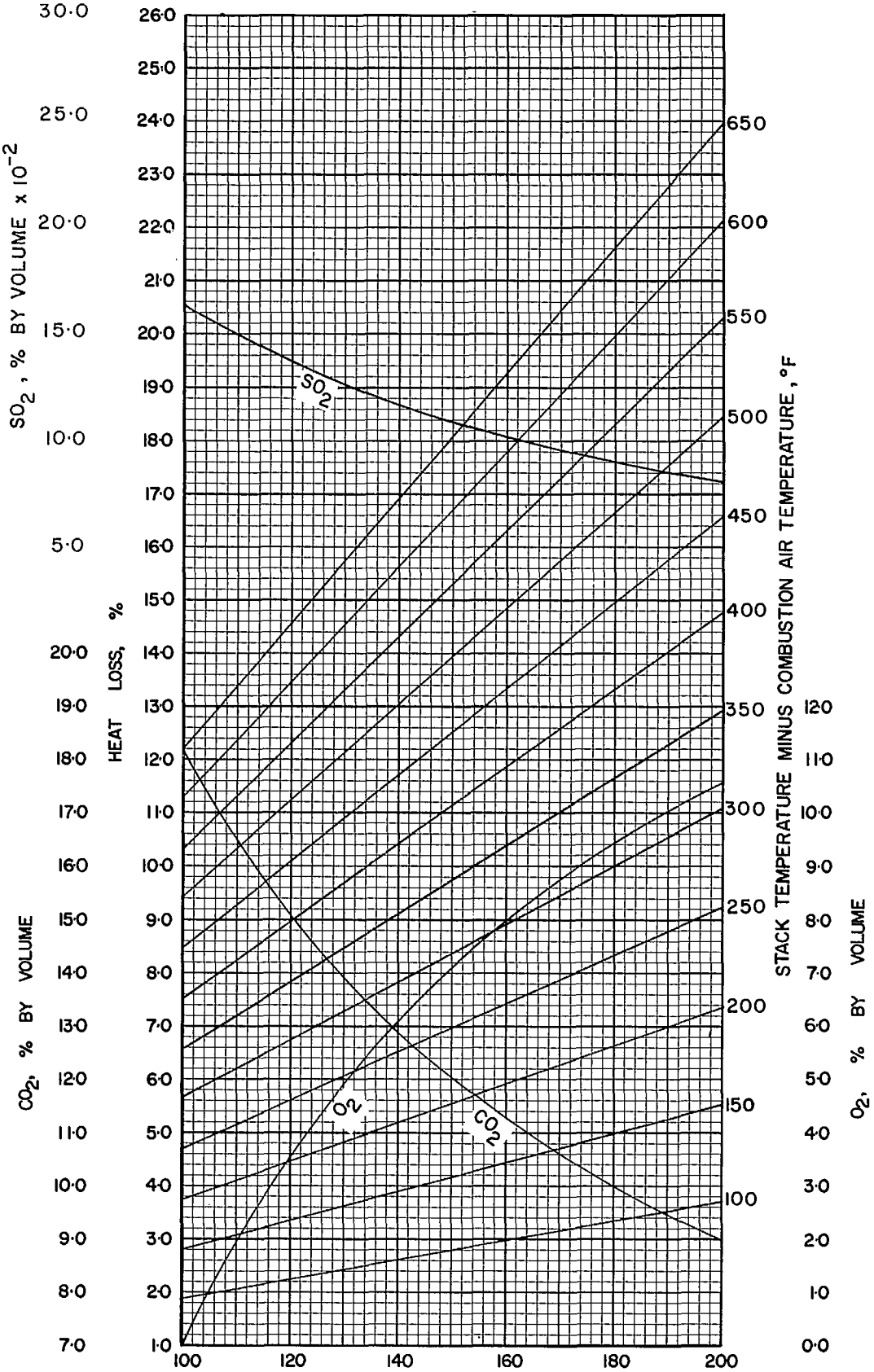

FIGURE 3· DRY FLUE GAS LOSS FOR A RANGE OF TEMPERATURE DIFFERENTIALS

US·P·3

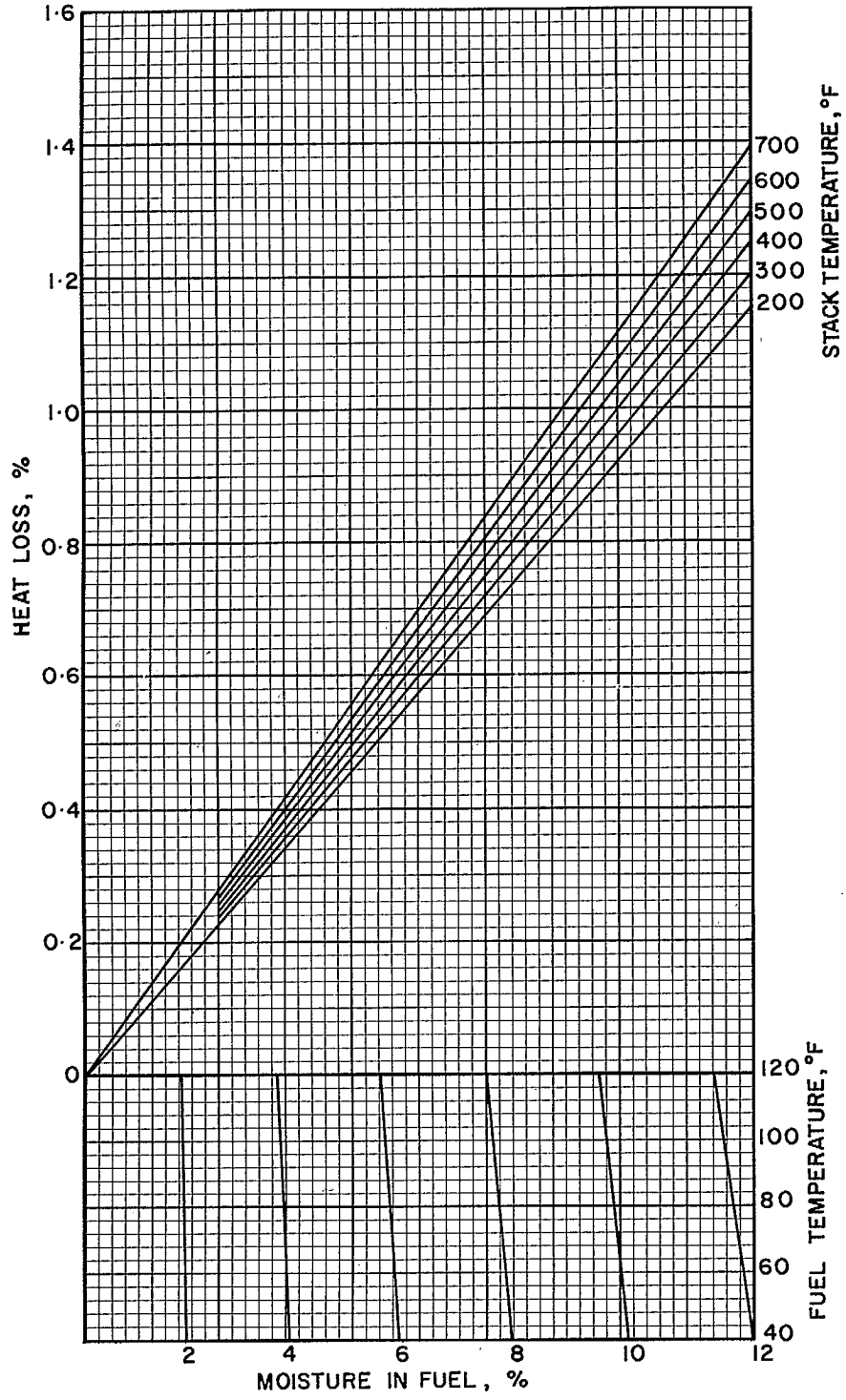

FIGURE 4· HEAT LOSS DUE TO MOISTURE IN COAL

US·P·3

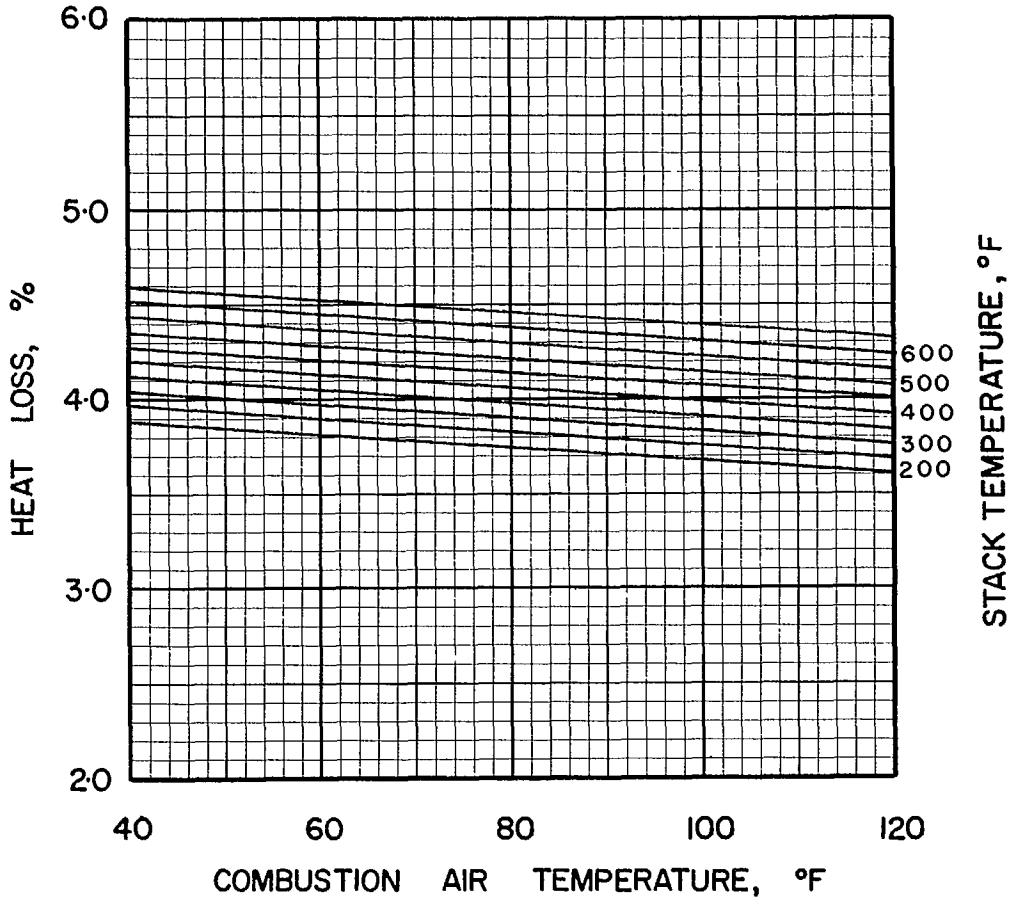

FIGURE 5· HYDROGEN LOSS FOR A RANGE OF STACK TEMPERATURES

US·P·3

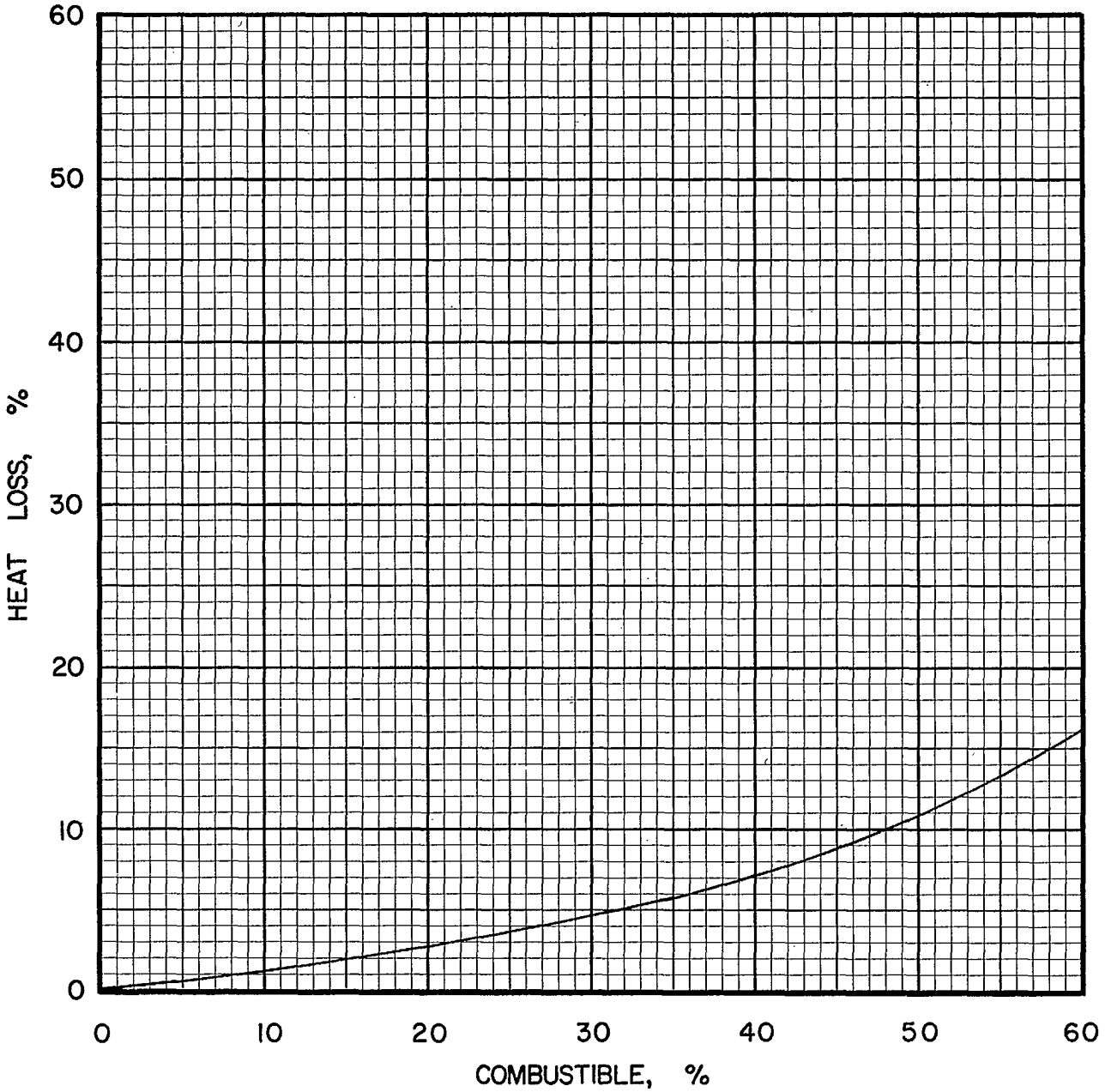

FIGURE 6 HEAT LOSS FOR A RANGE OF COMBUSTIBLE CONCENTRATIONS IN REFUSE

US·P·3

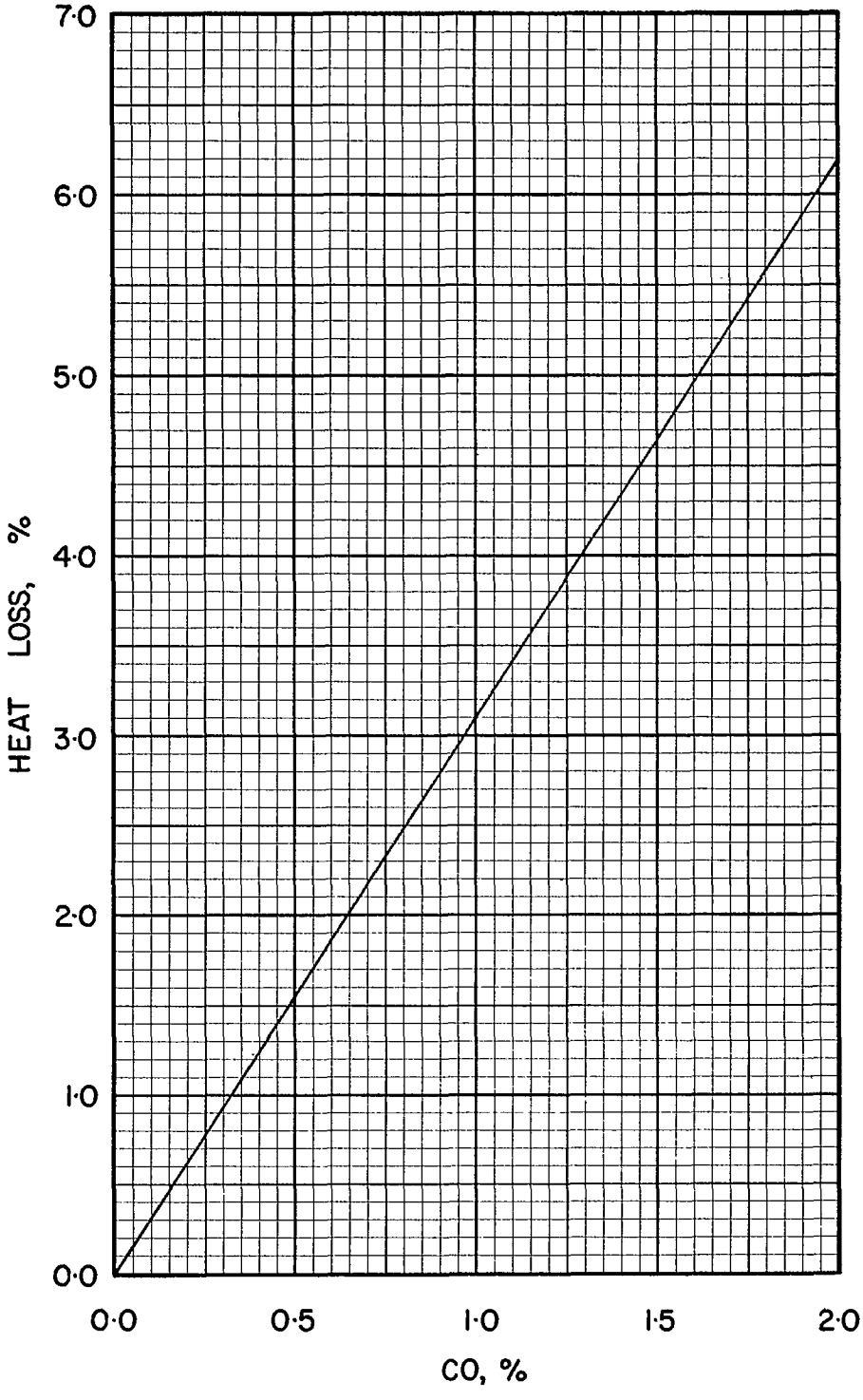

FIGURE 7 · HEAT LOSS FOR A RANGE OF CO CONCENTRATIONS, ASSUMING NEGLIGIBLE EXCESS AIR

US·P·3

COAL US P-4, DELL, BUTLER COUNTY

Typical Moisture Range: 4–12%

Proximate Analysis (lb/lb dry coal)

Ash	0.085
Volatile Matter	0.348
Fixed Carbon	0.567
Total	1.000

Ultimate Analysis (lb/lb dry coal)

Carbon (C)	0.769
Hydrogen (H)	0.051
Sulphur (S)	0.011
Nitrogen (N)	0.021
Oxygen (O)	0.063
Ash	0.085
Total	1.000

Gross Calorific Value

Btu/lb:	13470
Btu/short ton:	26.94×10^6
Btu/long ton:	30.17×10^6
MJ/kg:	31.32

Conversion Factors

1 short ton = 0.8929 long tons = 2000 lb
10^6 Btu = 74.24 lb
10^6 Btu = 0.03712 short tons
10^6 Btu = 0.03314 long tons

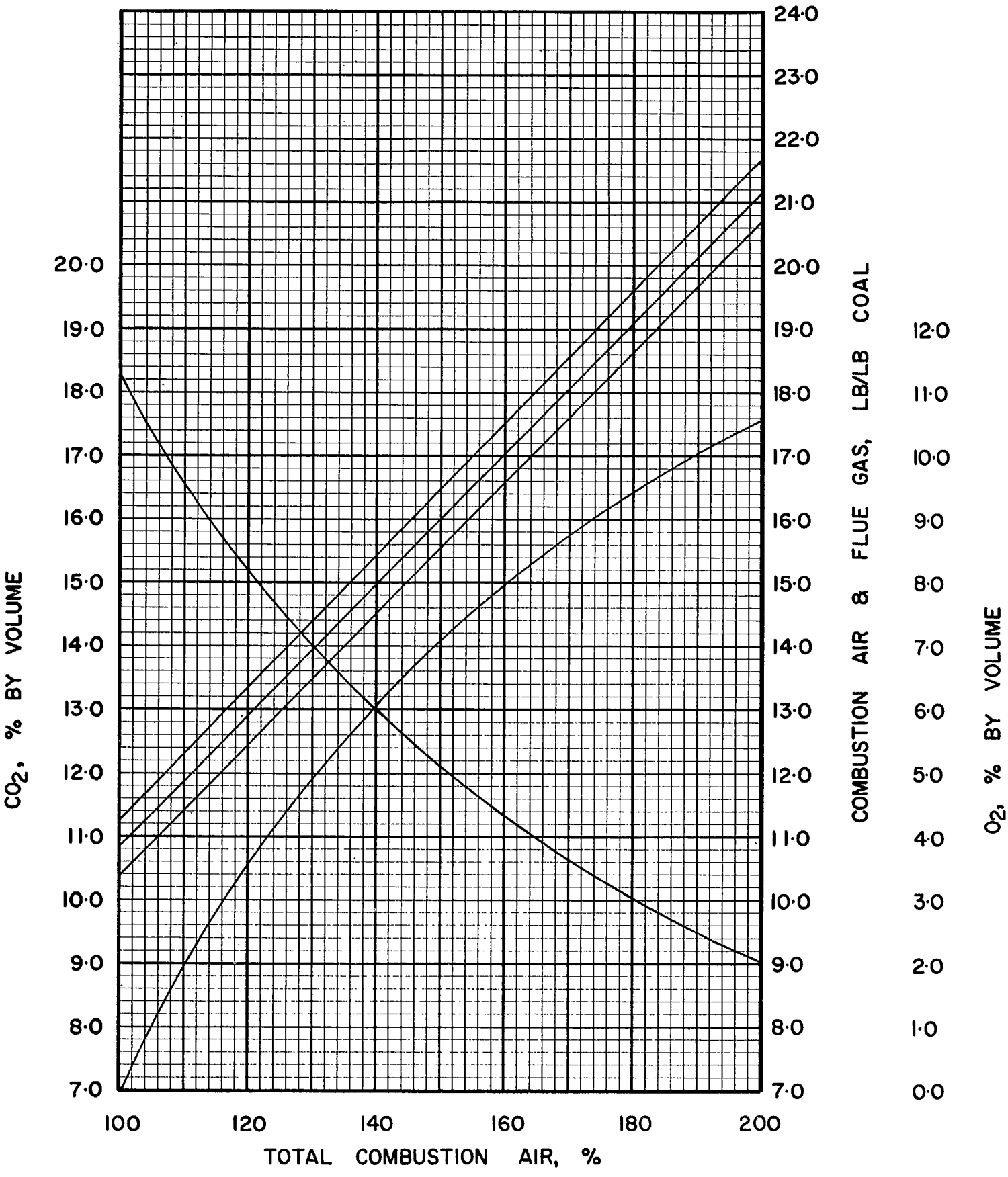

FIGURE 1· COMBUSTION DATA, WEIGHT BASIS

US·P·4

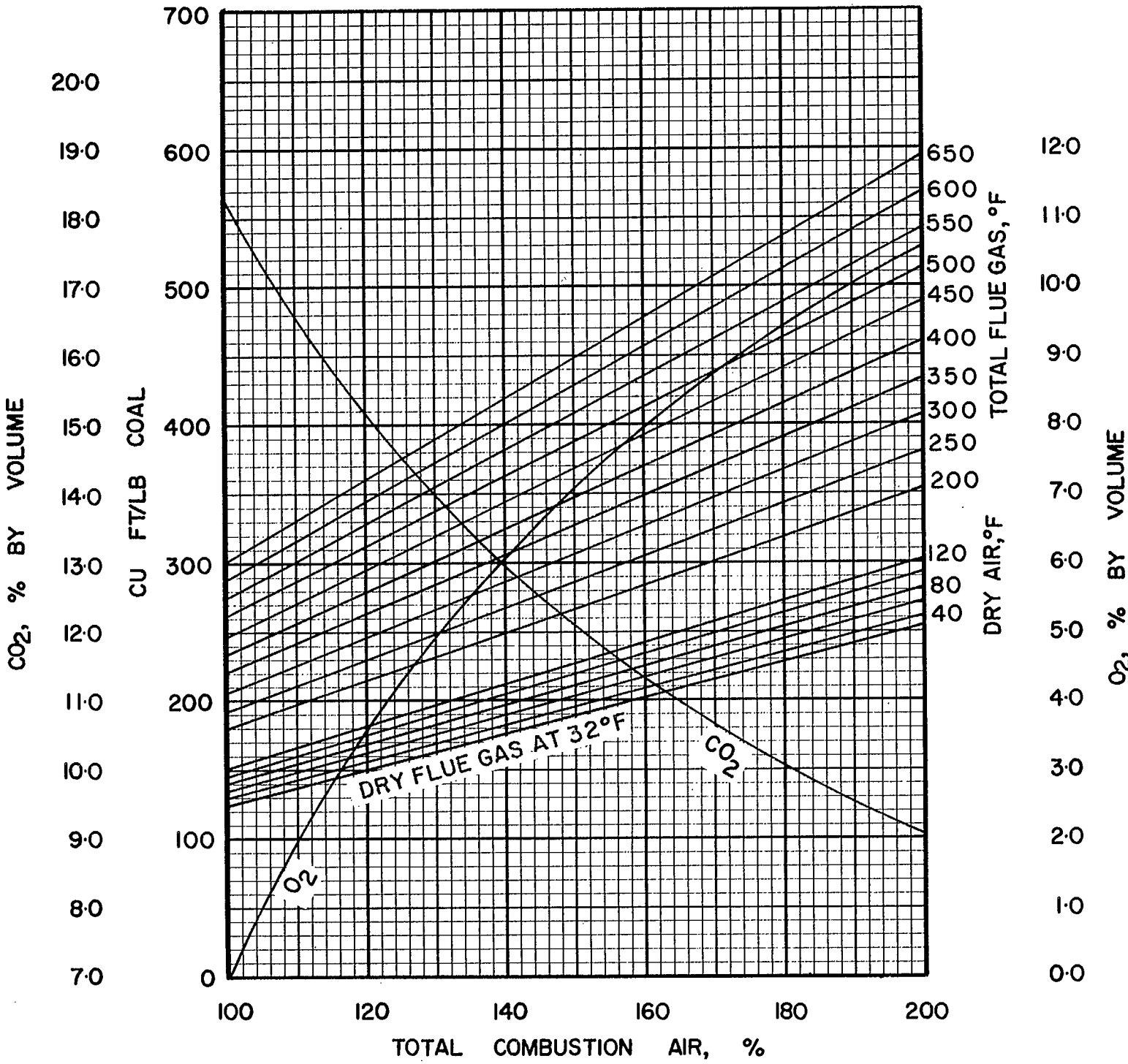

FIGURE 2· COMBUSTION DATA, VOLUME BASIS

US·P·4

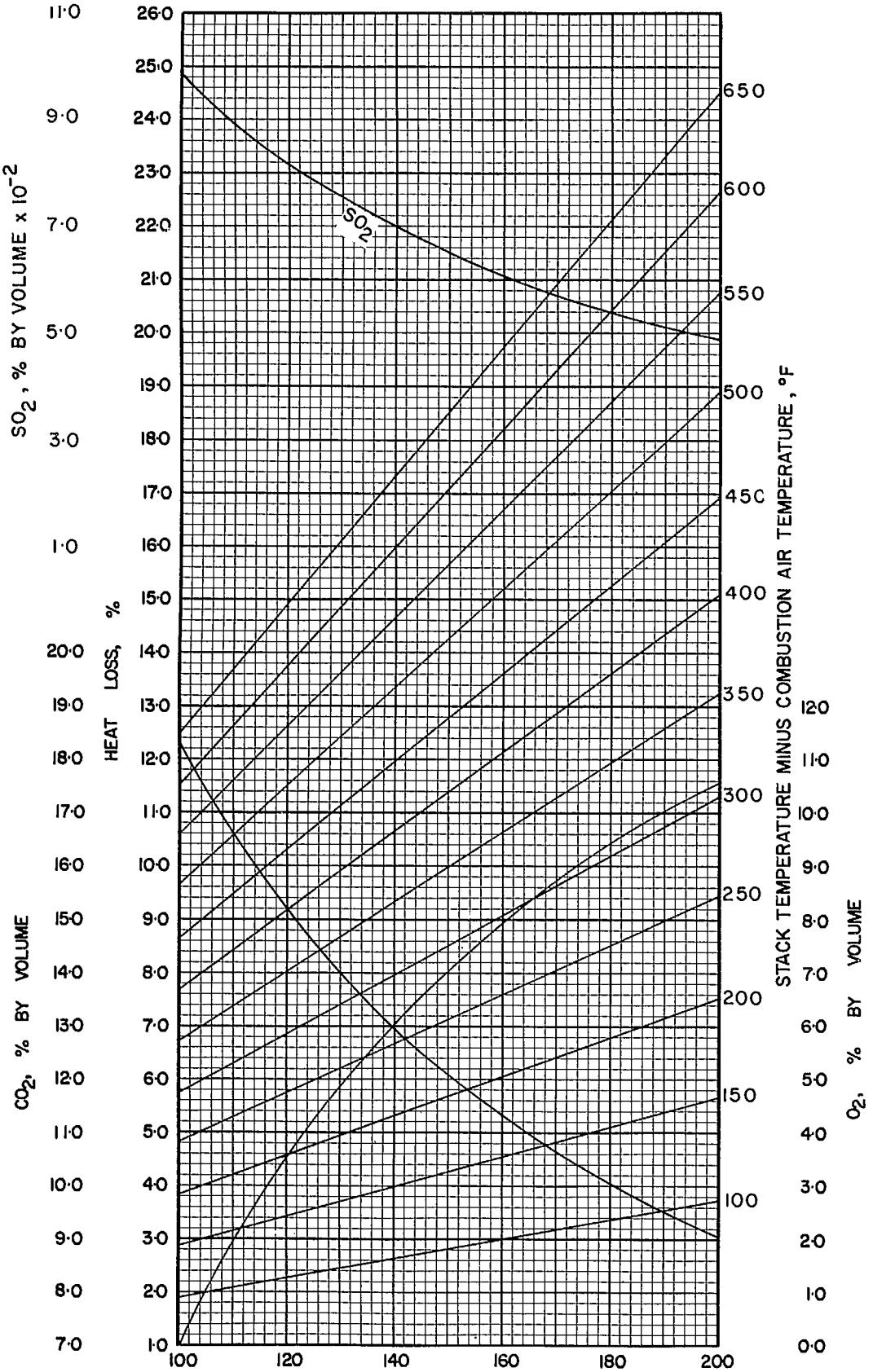

FIGURE 3· DRY FLUE GAS LOSS FOR A RANGE OF TEMPERATURE DIFFERENTIALS

US·P·4

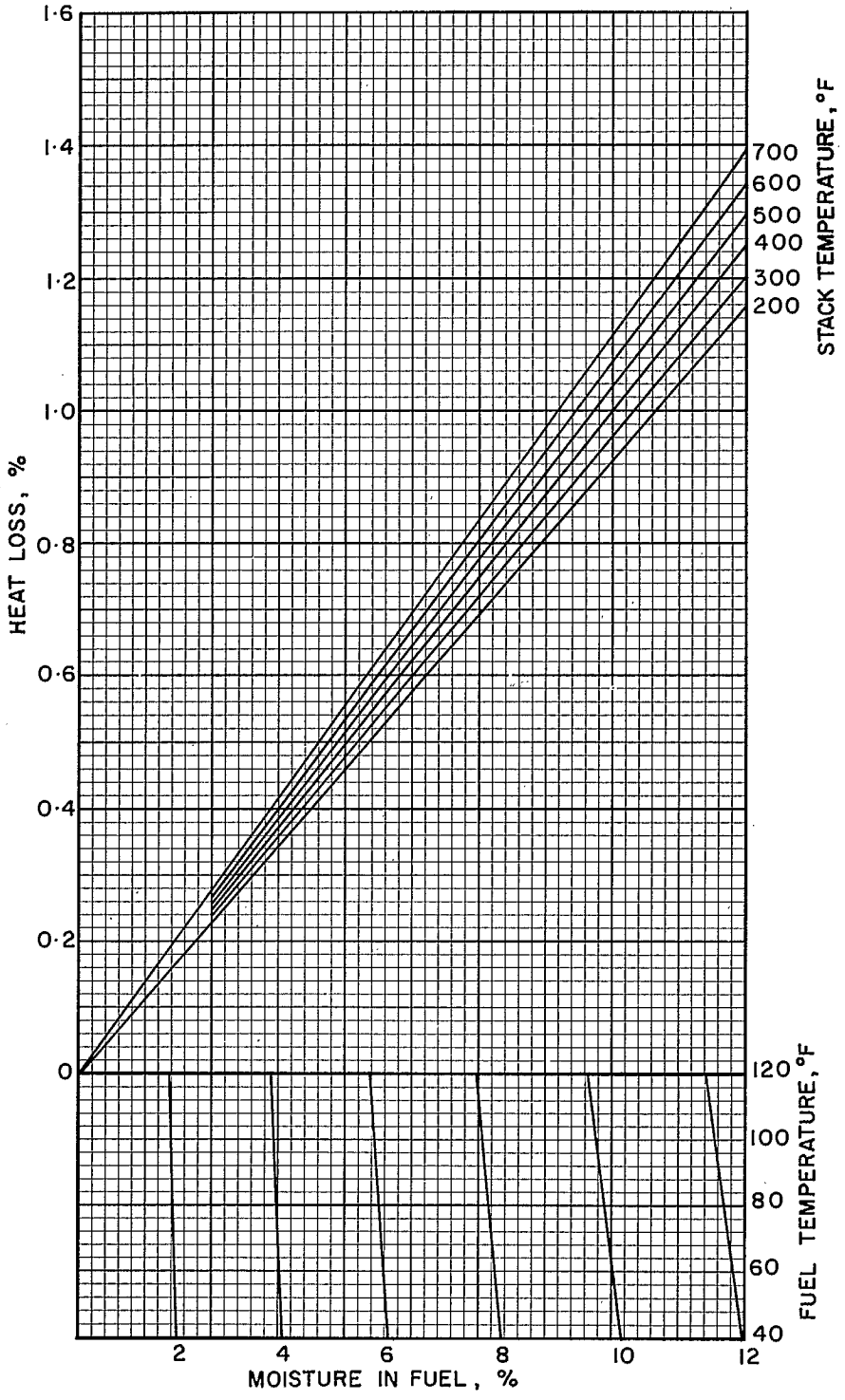

FIGURE 4 · HEAT LOSS DUE TO MOISTURE IN COAL

US·P·4

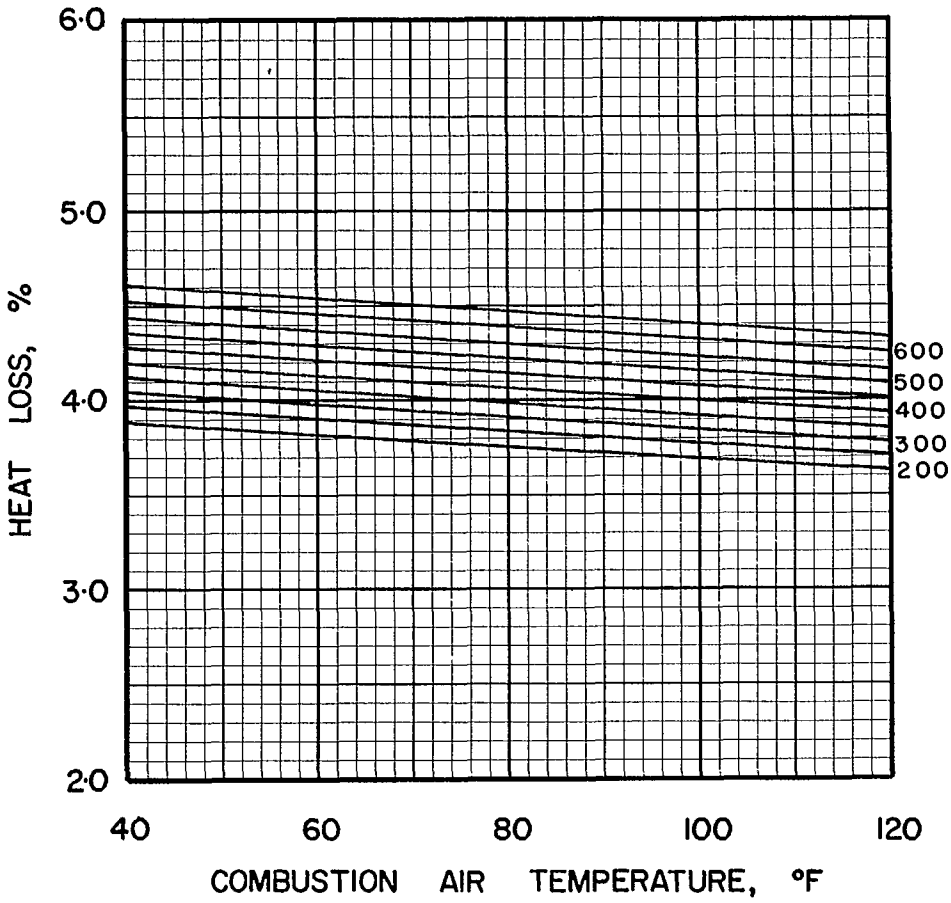

FIGURE 5· HYDROGEN LOSS FOR A RANGE OF STACK TEMPERATURES

US·P·4

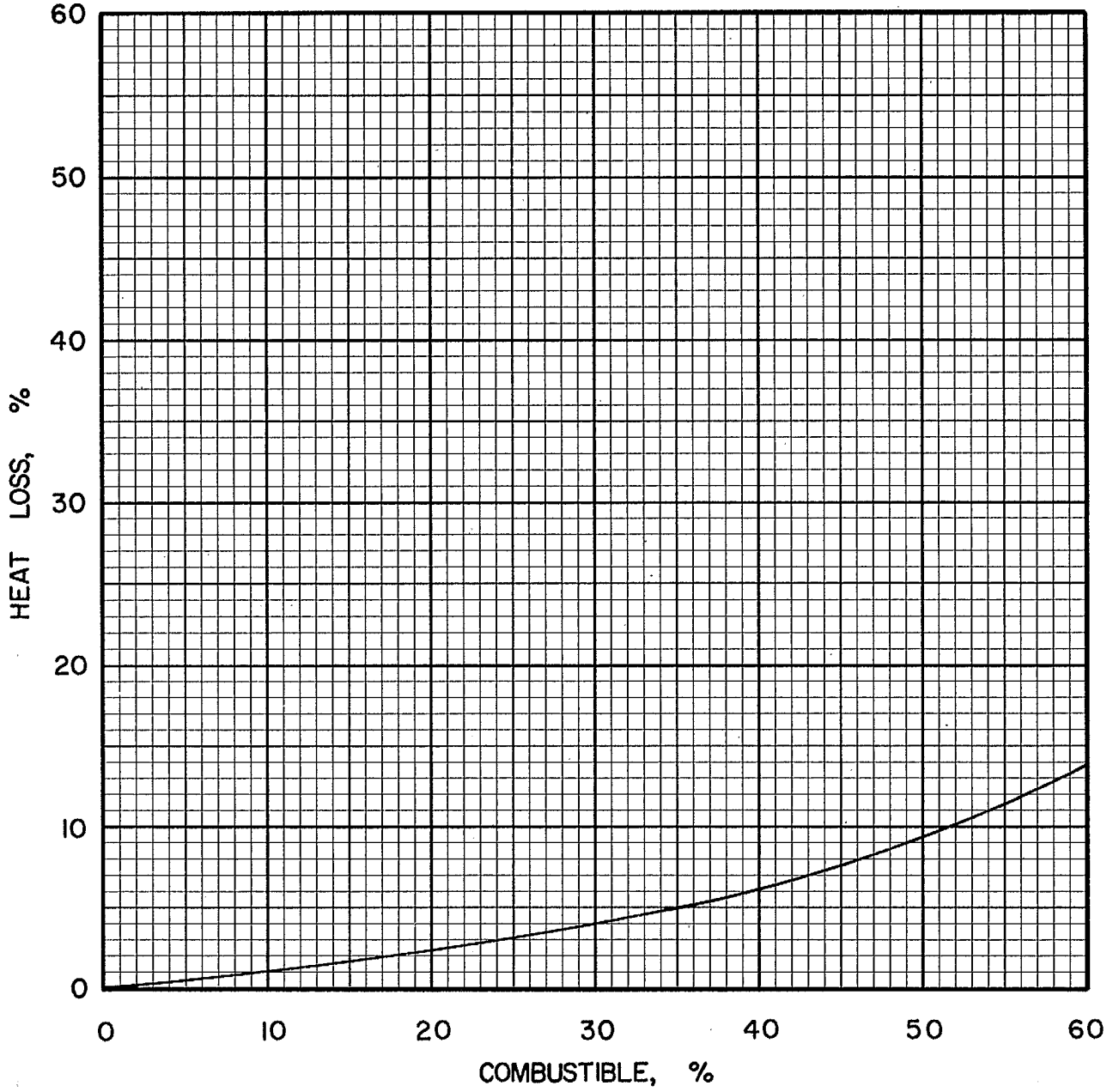

FIGURE 6 HEAT LOSS FOR A RANGE OF COMBUSTIBLE CONCENTRATIONS IN REFUSE

US·P·4

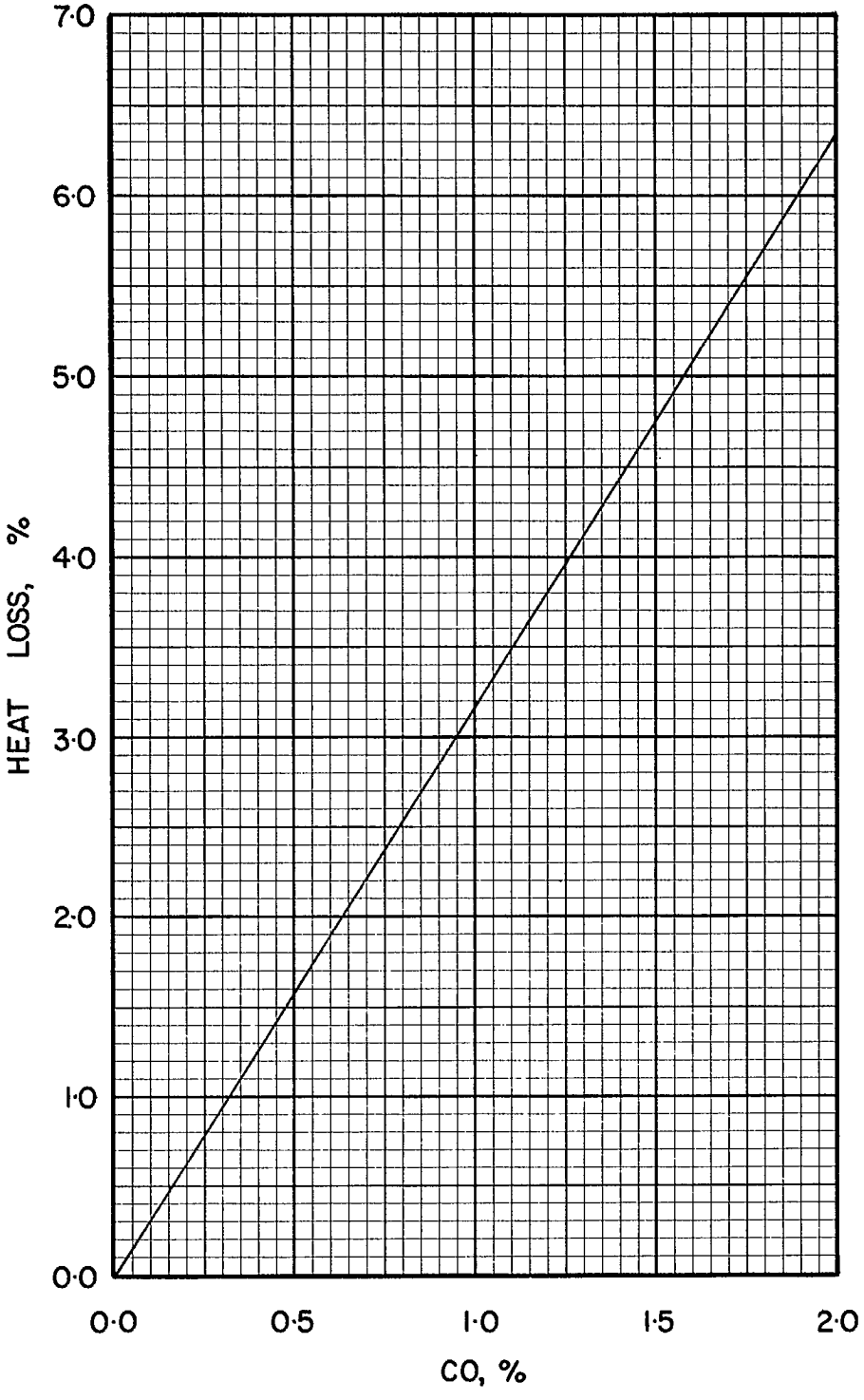

FIGURE 7 · HEAT LOSS FOR A RANGE OF CO CONCENTRATIONS, ASSUMING NEGLIGIBLE EXCESS AIR

US·P·4

COAL US P-5, DEMONT, WESTMORELAND COUNTY

Typical Moisture Range: 0–8%

Proximate Analysis (lb/lb dry coal)

Ash	0.093
Volatile Matter	0.335
Fixed Carbon	0.572
Total	1.000

Ultimate Analysis (lb/lb dry coal)

Carbon (C)	0.759
Hydrogen (H)	0.052
Sulphur (S)	0.025
Nitrogen (N)	0.016
Oxygen (O)	0.055
Ash	0.093
Total	1.000

Gross Calorific Value

Btu/lb:	14027
Btu/short ton:	28.05×10^6
Btu/long ton:	31.42×10^6
MJ/kg:	32.62

Conversion Factors

1 short ton = 0.8929 long tons = 2000 lb
10^6 Btu = 71.29 lb
10^6 Btu = 0.03565 short tons
10^6 Btu = 0.03183 long tons

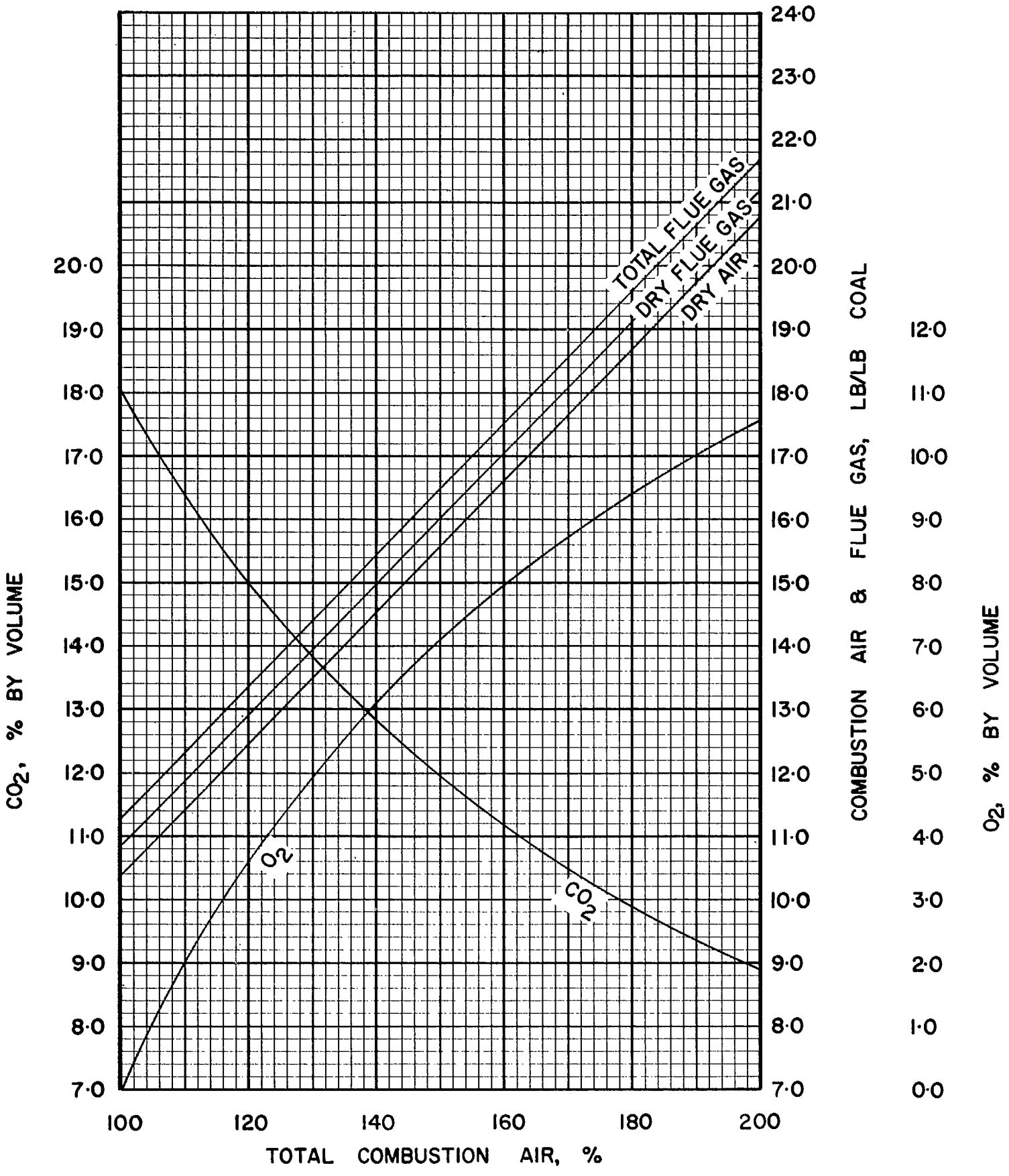

FIGURE 1· COMBUSTION DATA, WEIGHT BASIS

US·P·5

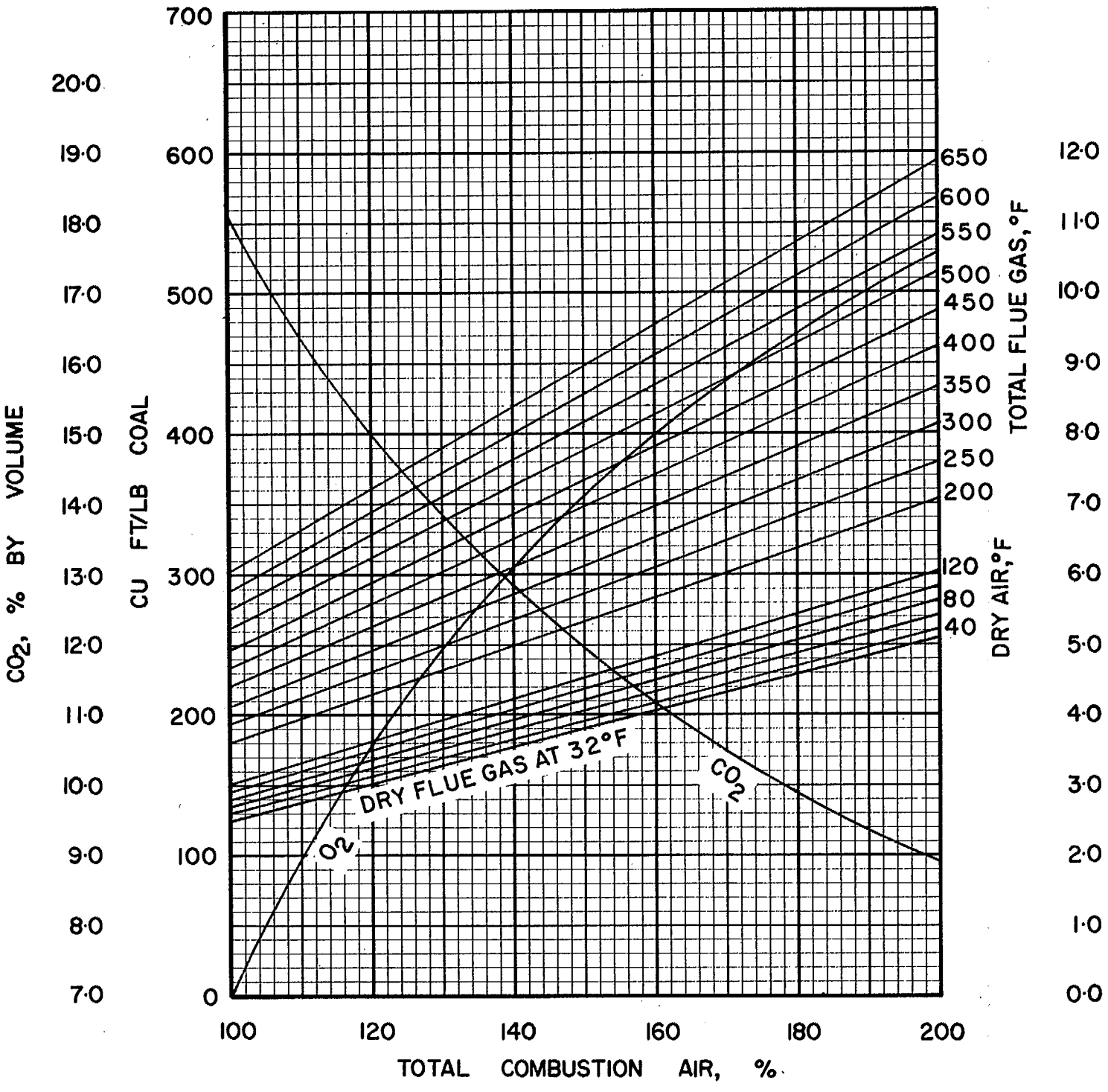

FIGURE 2· COMBUSTION DATA, VOLUME BASIS

US·P·5

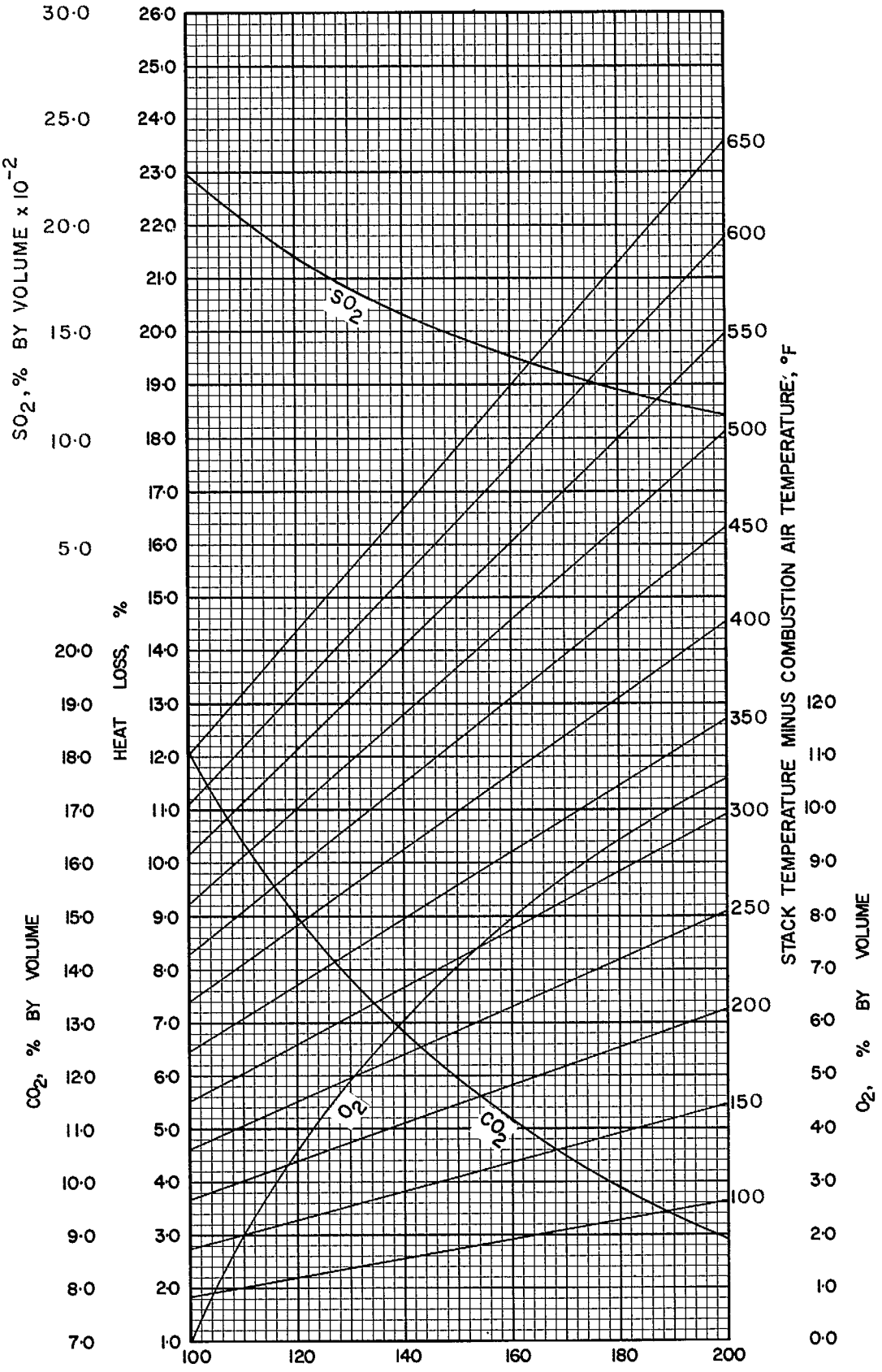

FIGURE 3· DRY FLUE GAS LOSS FOR A RANGE OF TEMPERATURE DIFFERENTIALS

US·P·5

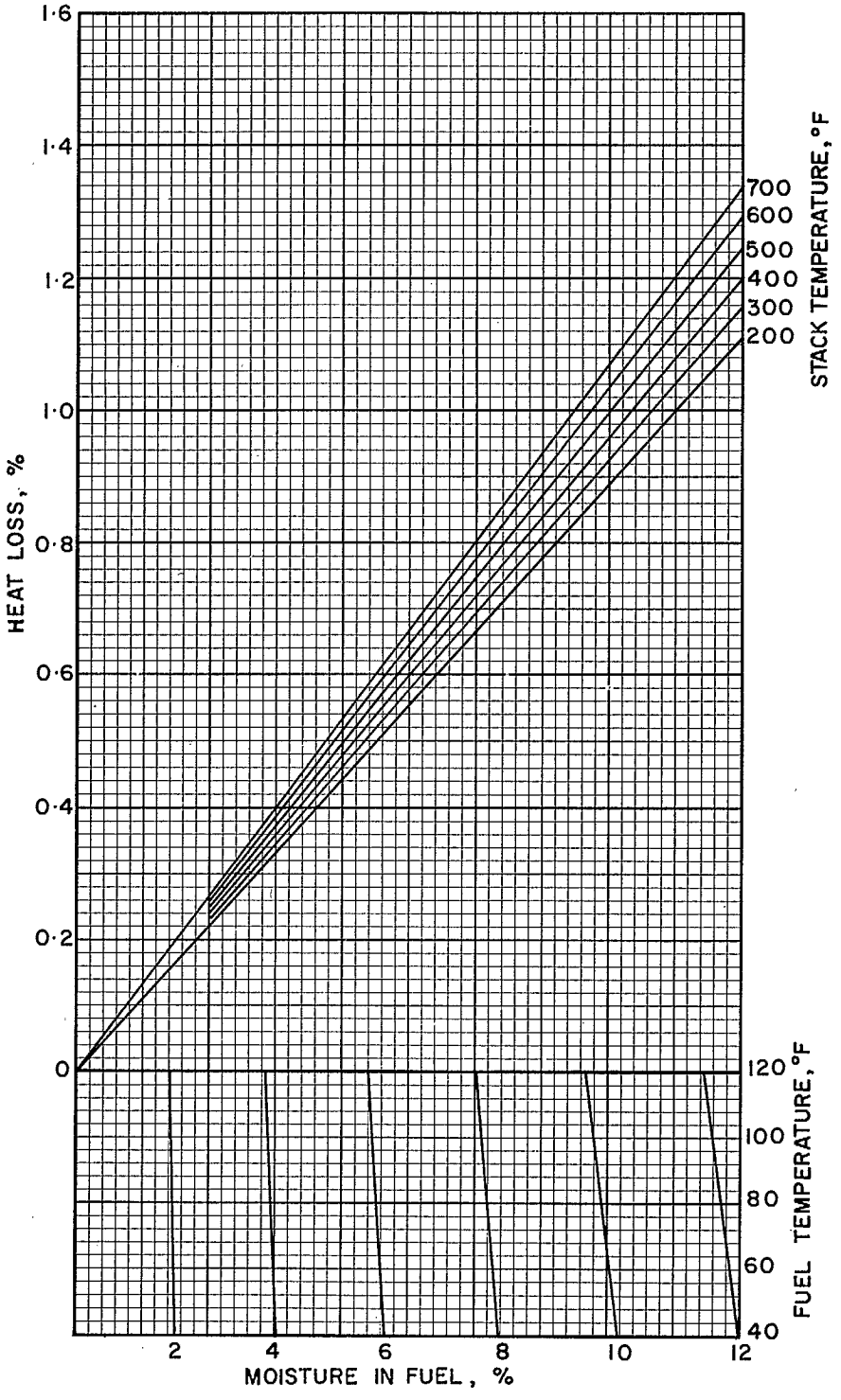

FIGURE 4· HEAT LOSS DUE TO MOISTURE IN COAL

US·P·5

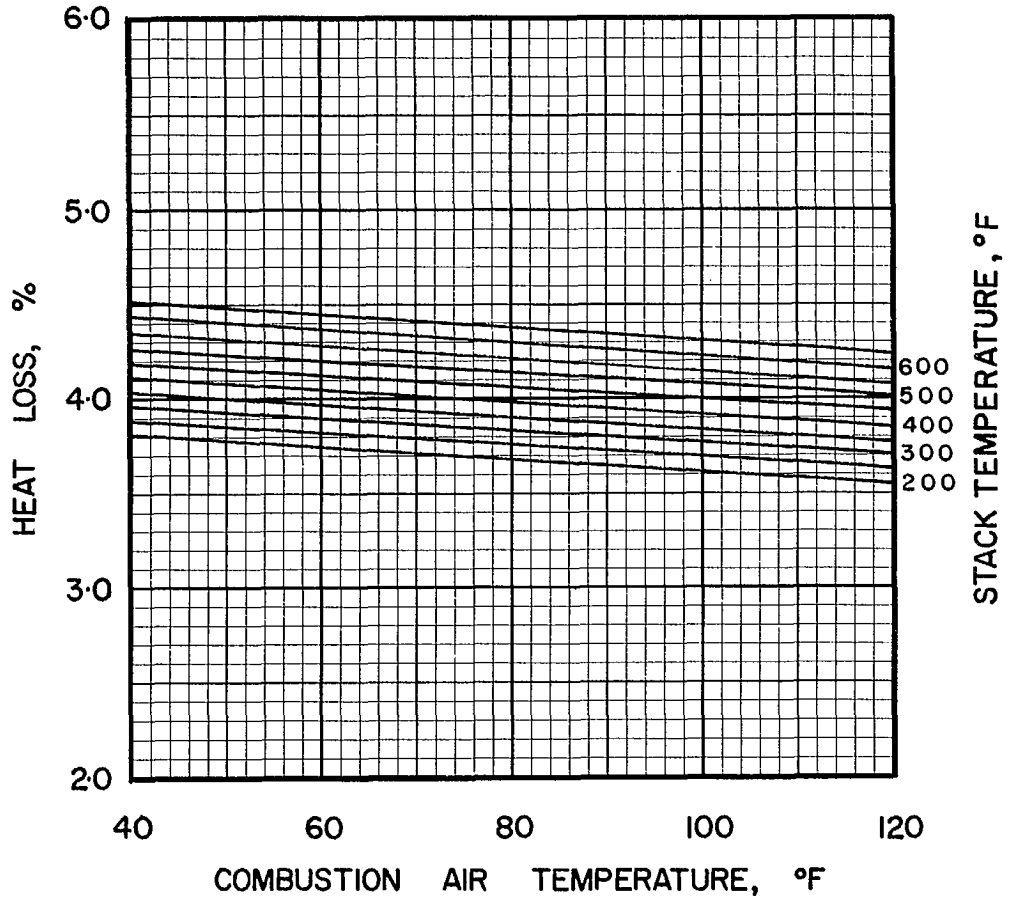

FIGURE 5· HYDROGEN LOSS FOR A RANGE OF STACK TEMPERATURES

US·P·5

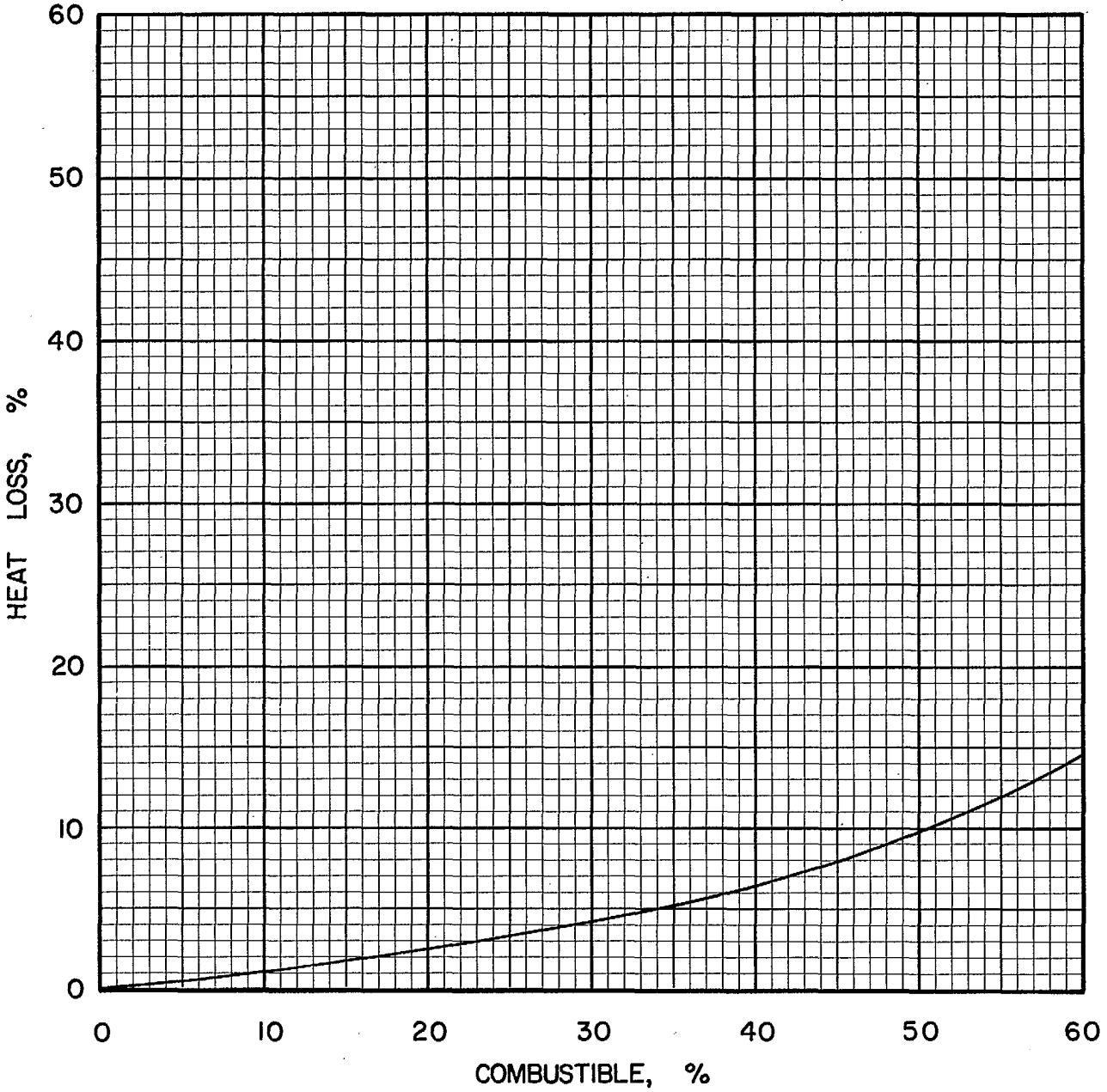

FIGURE 6 HEAT LOSS FOR A RANGE OF COMBUSTIBLE CONCENTRATIONS IN REFUSE

US·P·5

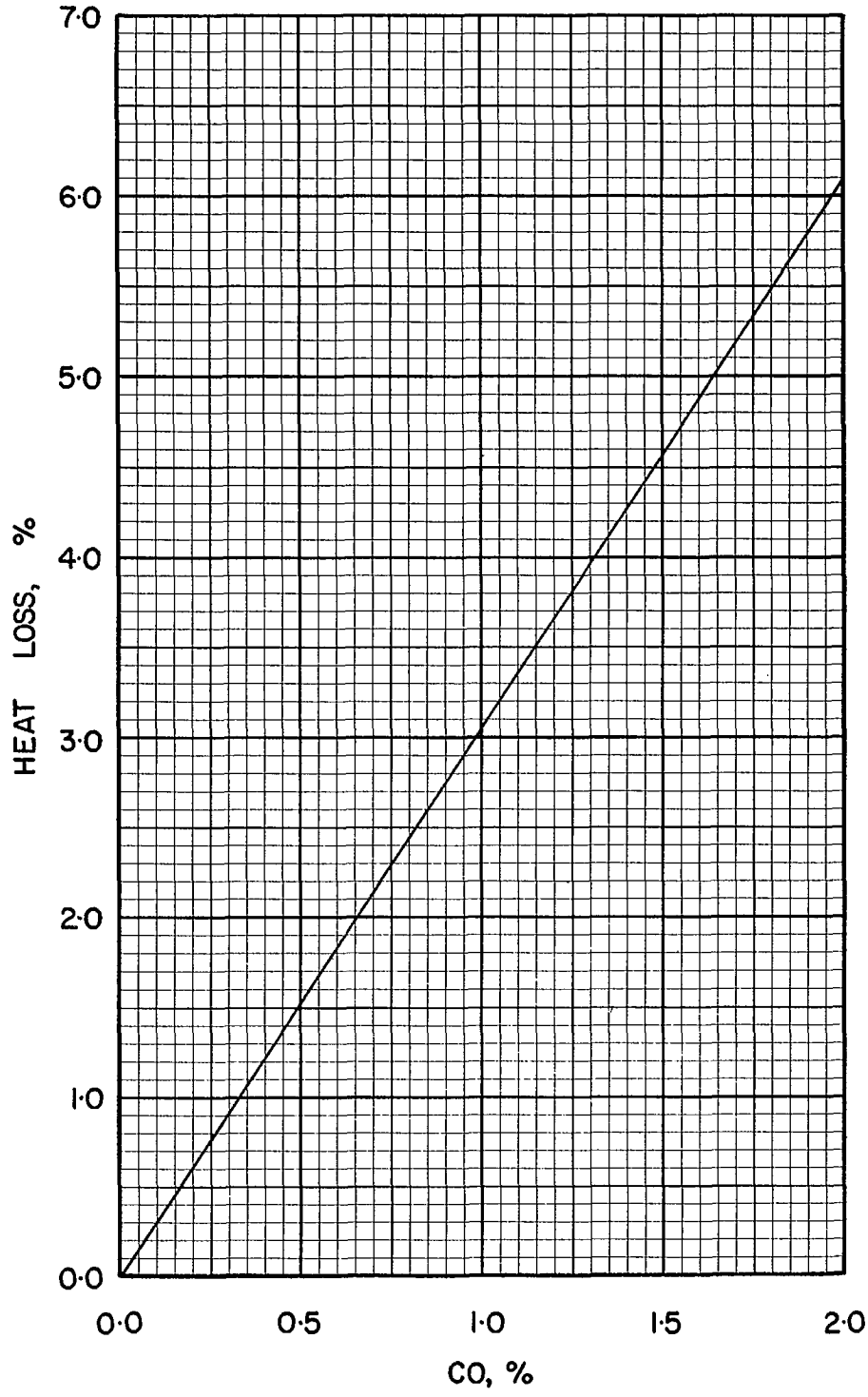

FIGURE 7 · HEAT LOSS FOR A RANGE OF CO CONCENTRATIONS, ASSUMING NEGLIGIBLE EXCESS AIR

US·P·5

COAL US P-6, FOSTER, ARMSTRONG COUNTY

Typical Moisture Range: 0–8%

Proximate Analysis (lb/lb dry coal)

Ash	0.131
Volatile Matter	0.349
Fixed Carbon	0.520
Total	1.000

Ultimate Analysis (lb/lb dry coal)

Carbon (C)	0.719
Hydrogen (H)	0.050
Sulphur (S)	0.031
Nitrogen (N)	0.014
Oxygen (O)	0.055
Ash	0.131
Total	1.000

Gross Calorific Value

Btu/lb:	13271
Btu/short ton:	26.54×10^6
Btu/long ton:	29.73×10^6
MJ/kg:	30.86

Conversion Factors

1 short ton = 0.8929 long tons = 2000 lb
10^6 Btu = 75.35 lb
10^6 Btu = 0.03768 short tons
10^6 Btu = 0.03364 long tons

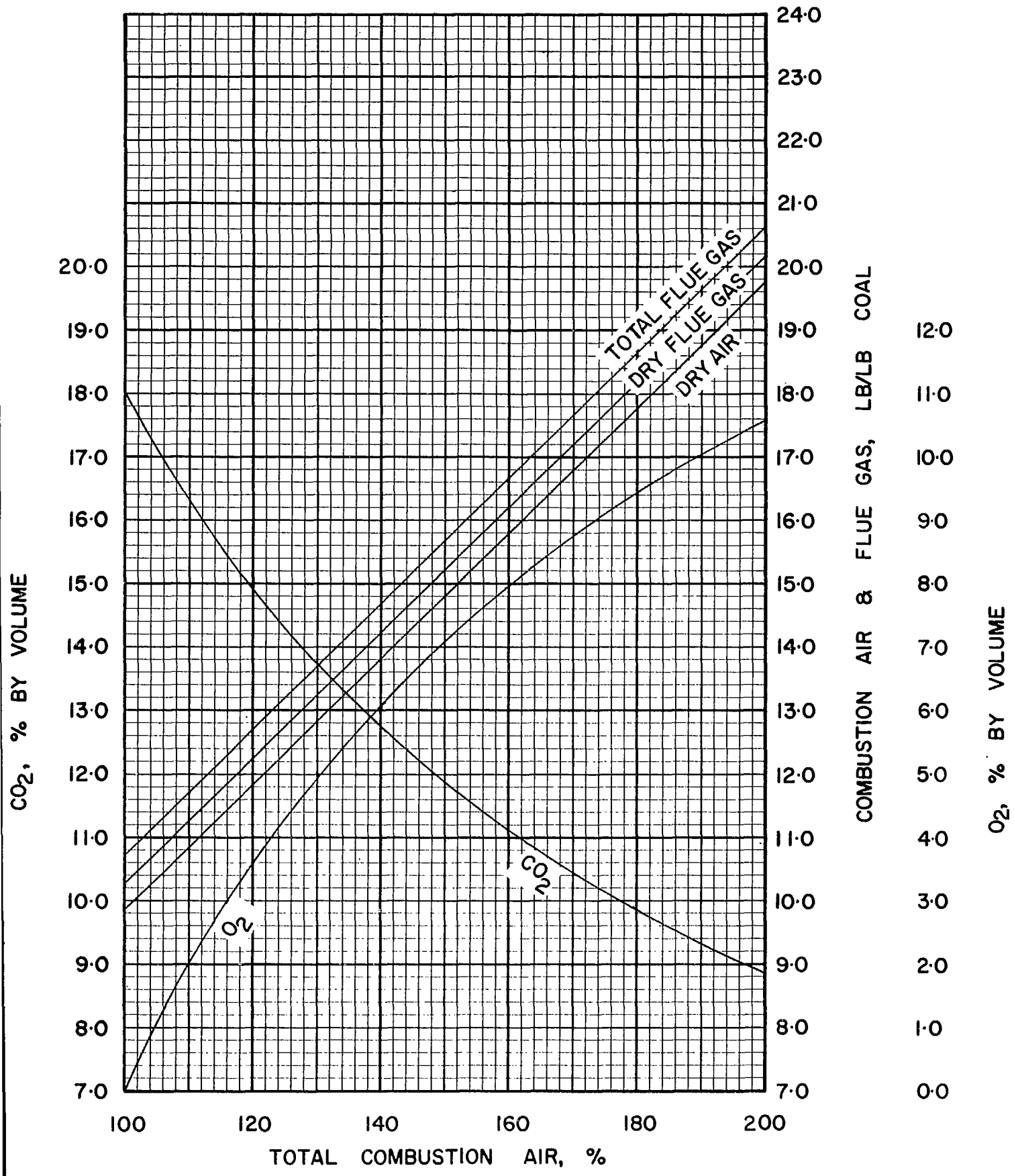

FIGURE 1· COMBUSTION DATA, WEIGHT BASIS

US·P·6

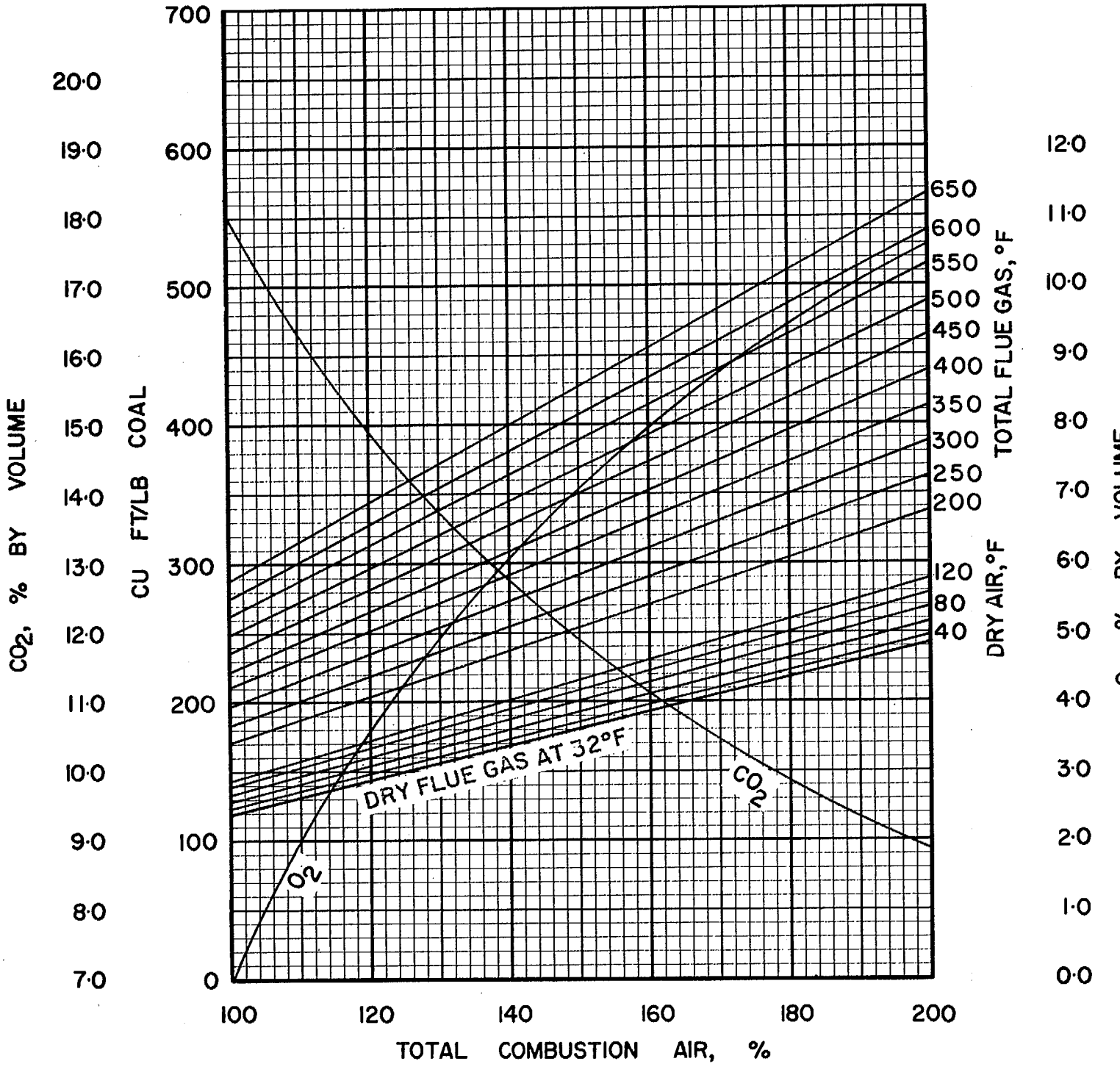

FIGURE 2 · COMBUSTION DATA, VOLUME BASIS

US·P·6

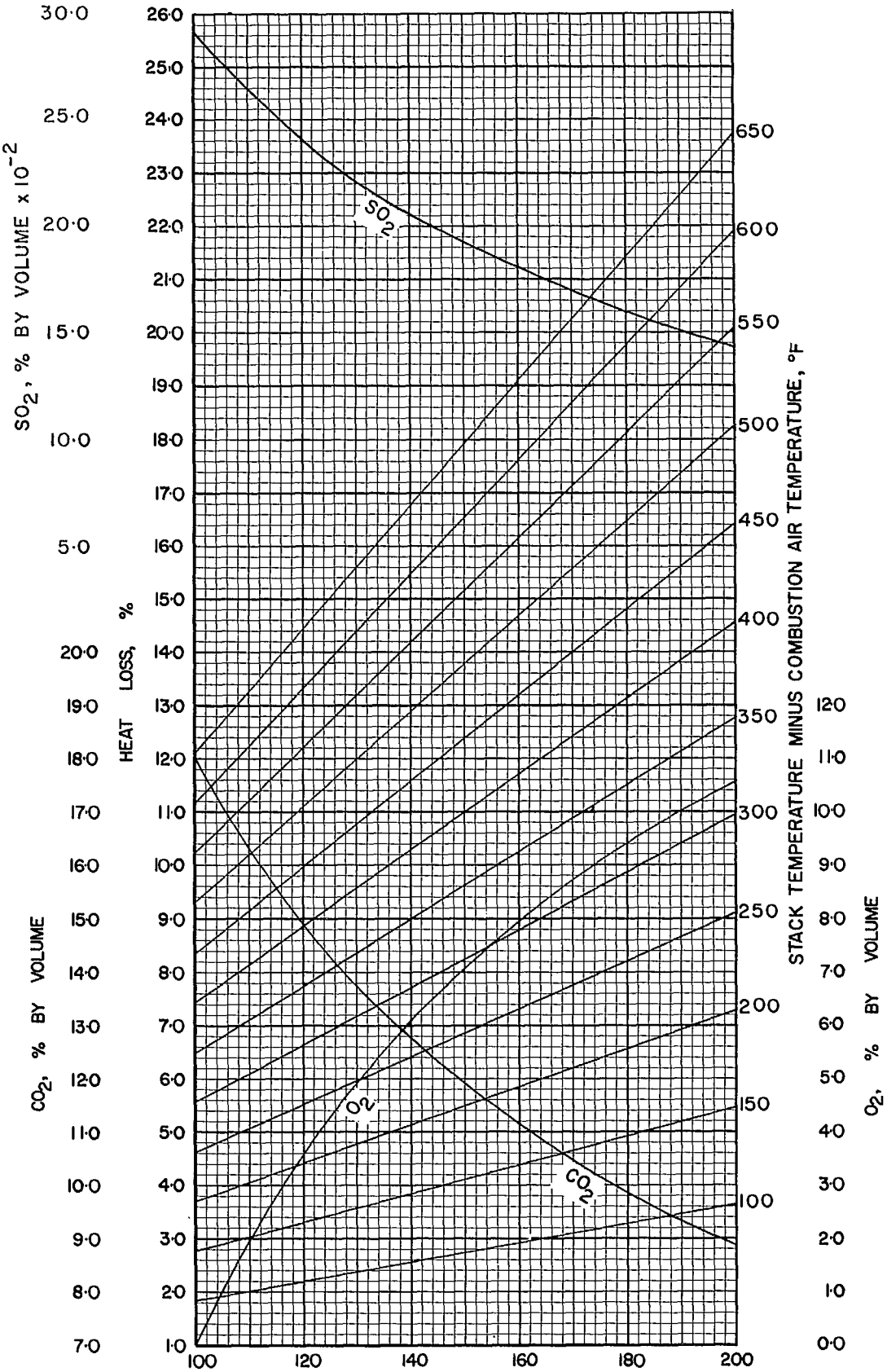

FIGURE 3· DRY FLUE GAS LOSS FOR A RANGE OF TEMPERATURE DIFFERENTIALS

US·P·6

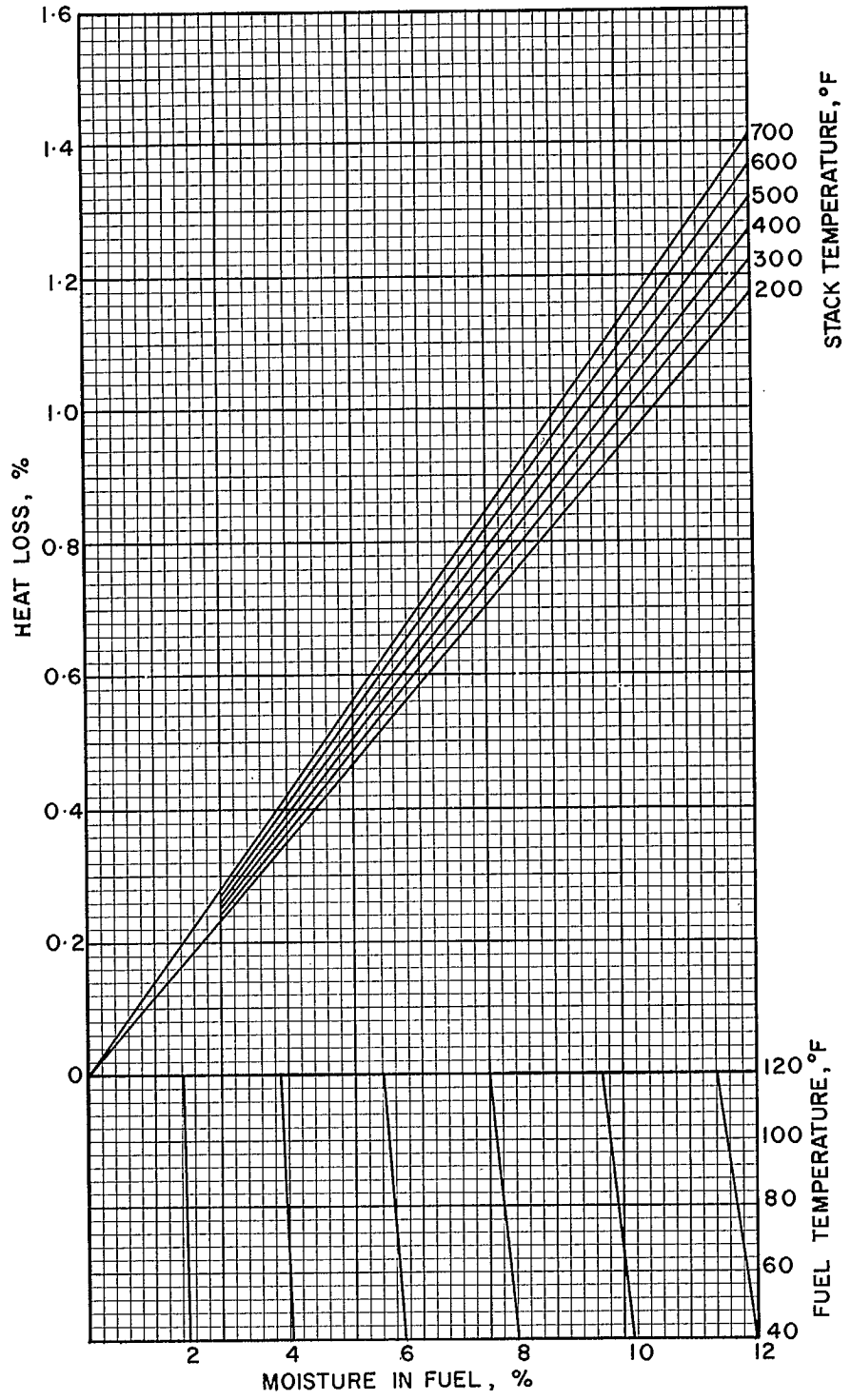

FIGURE 4· HEAT LOSS DUE TO MOISTURE IN COAL

US·P·6

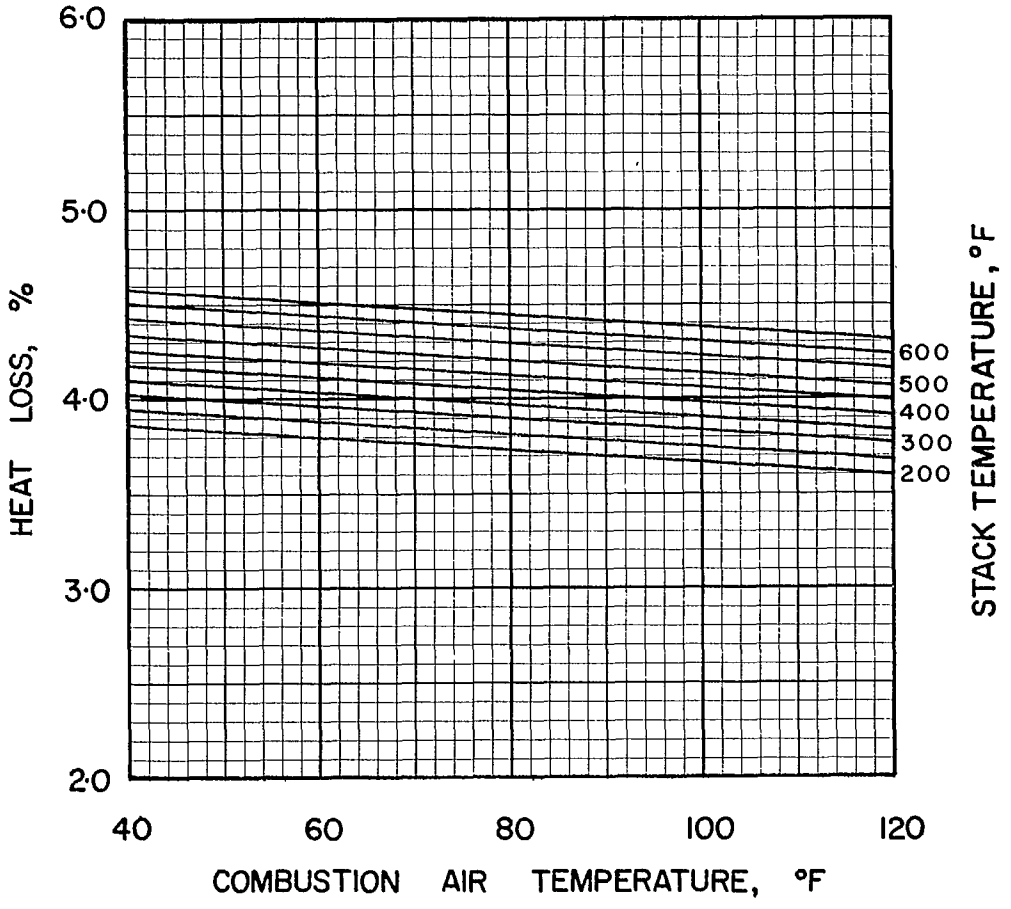

FIGURE 5· HYDROGEN LOSS FOR A RANGE OF STACK TEMPERATURES

US·P·6

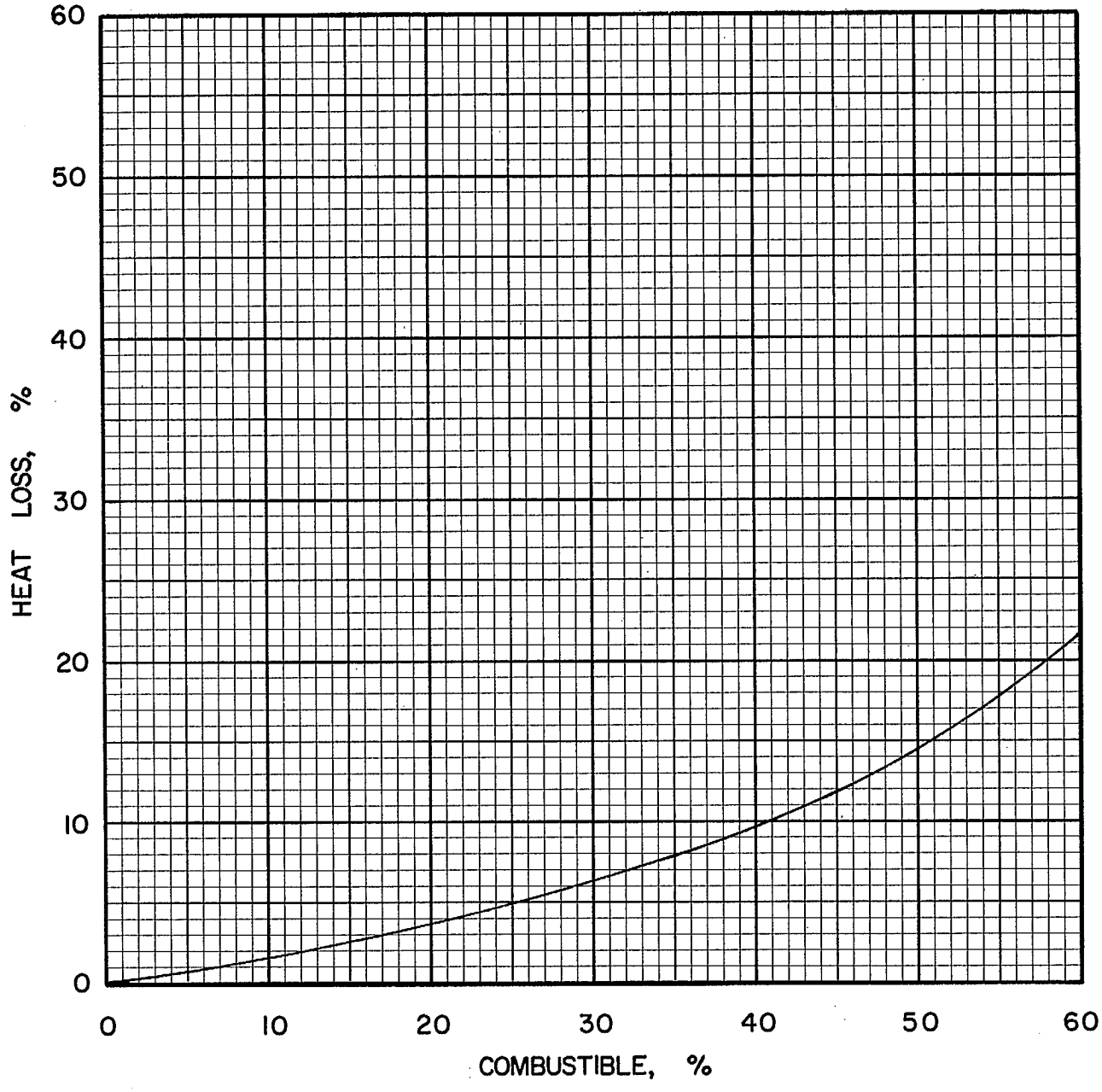

FIGURE 6 HEAT LOSS FOR A RANGE OF COMBUSTIBLE CONCENTRATIONS IN REFUSE

US·P·6

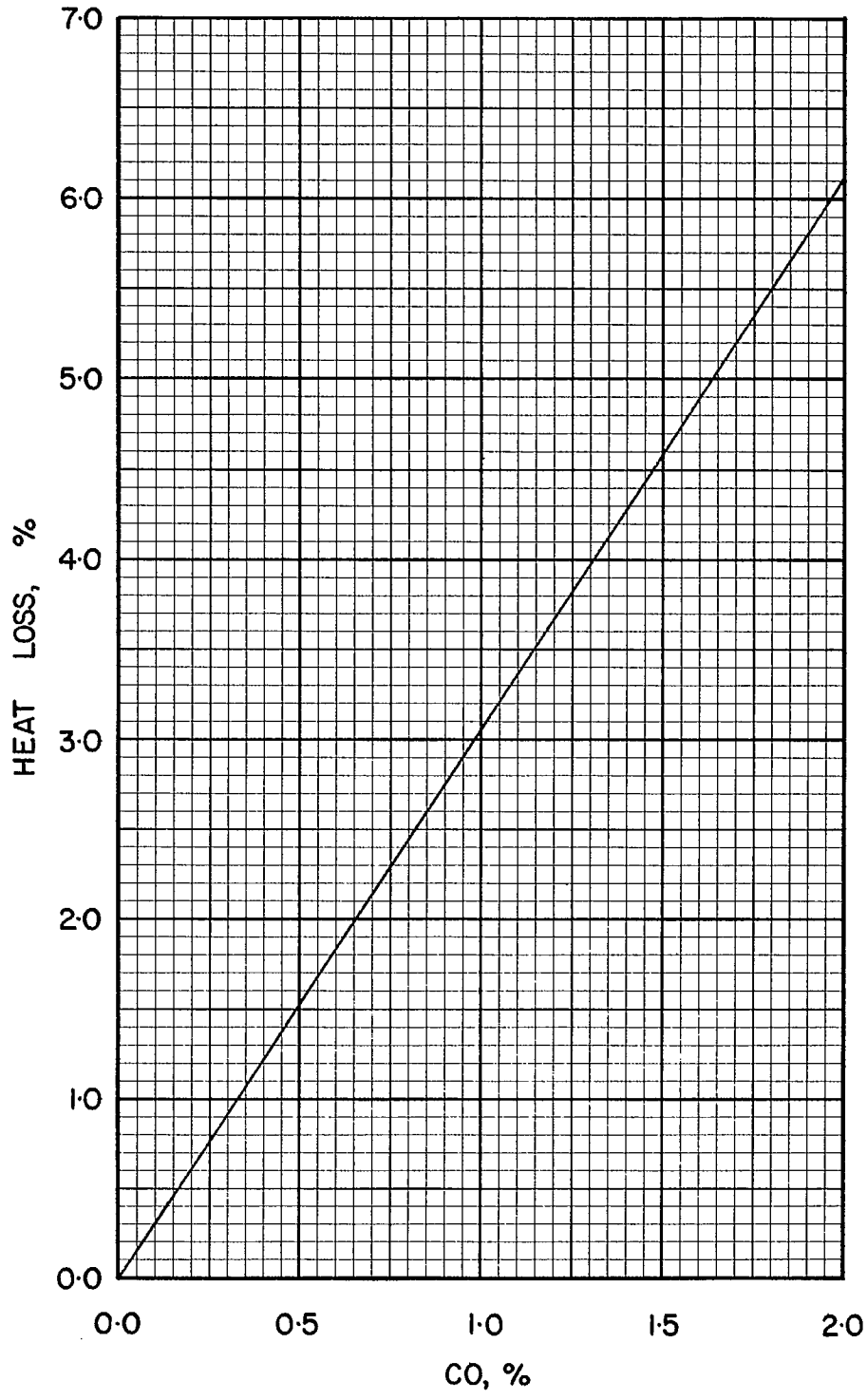

FIGURE 7 · HEAT LOSS FOR A RANGE OF CO CONCENTRATIONS, ASSUMING NEGLIGIBLE EXCESS AIR

US·P·6

COAL US P-7, HUTCHISON, WESTMORELAND COUNTY

Typical Moisture Range: 0–8%

Proximate Analysis (lb/lb dry coal)

Ash	0.093
Volatile Matter	0.331
Fixed Carbon	0.576
Total	1.000

Ultimate Analysis (lb/lb dry coal)

Carbon (C)	0.773
Hydrogen (H)	0.050
Sulphur (S)	0.010
Nitrogen (N)	0.014
Oxygen (O)	0.060
Ash	0.093
Total	1.000

Gross Calorific Value

Btu/lb:	13868
Btu/short ton:	27.74×10^6
Btu/long ton:	31.06×10^6
MJ/kg:	32.25

Conversion Factors

1 short ton = 0.8929 long tons = 2000 lb
10^6 Btu = 72.11 lb
10^6 Btu = 0.03605 short tons
10^6 Btu = 0.03219 long tons

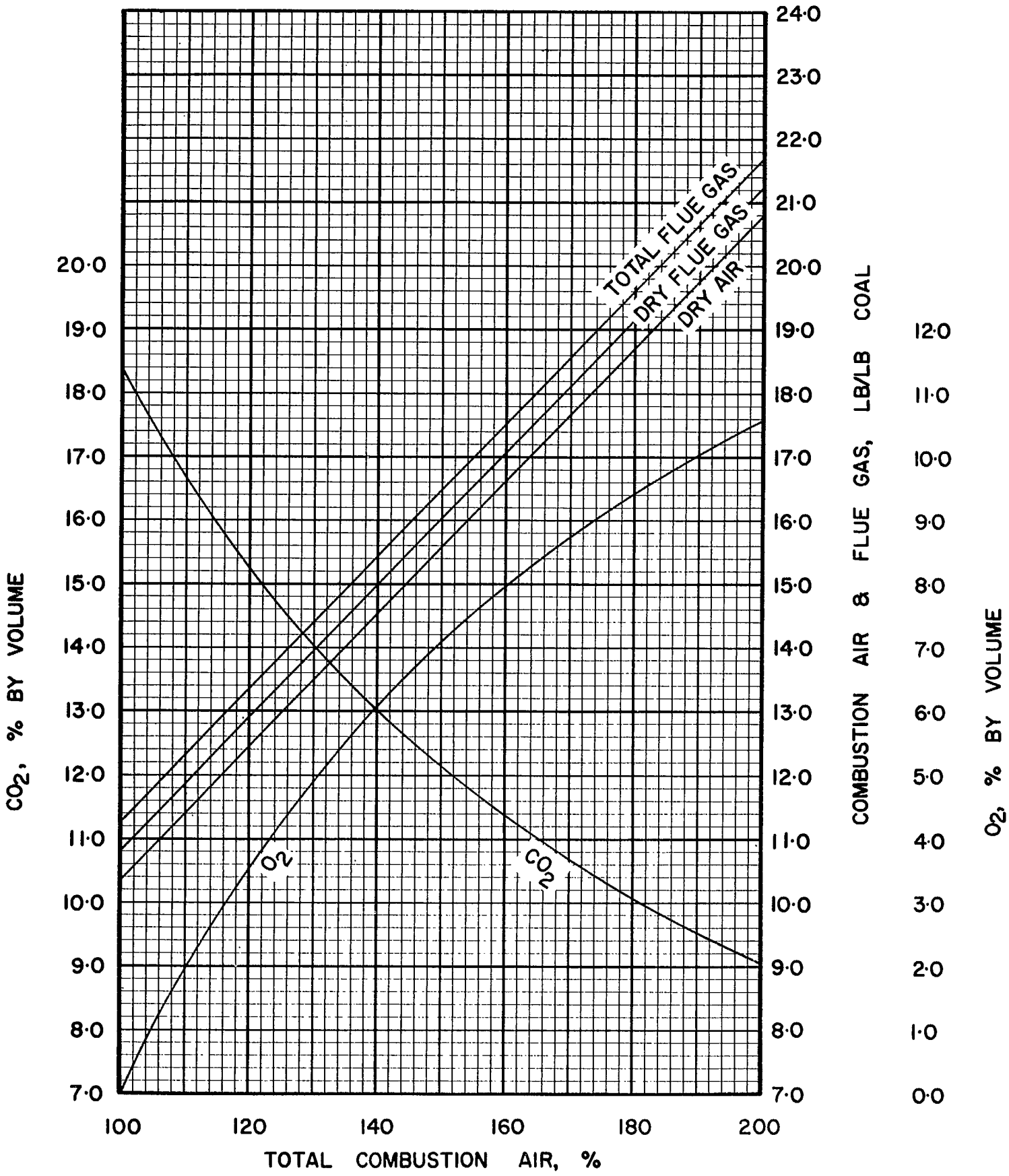

FIGURE 1· COMBUSTION DATA, WEIGHT BASIS

US·P·7

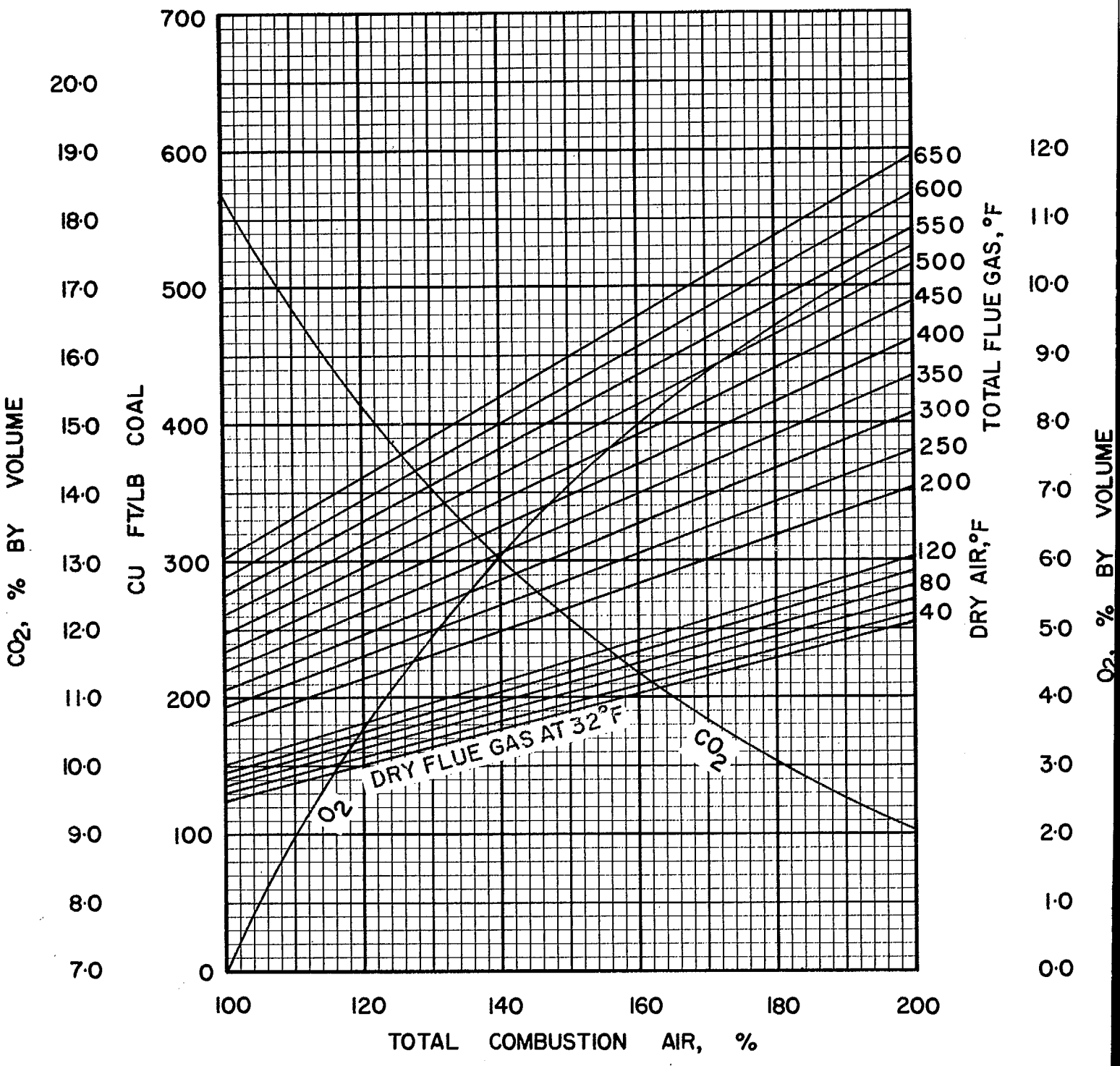

FIGURE 2· COMBUSTION DATA, VOLUME BASIS

US·P·7

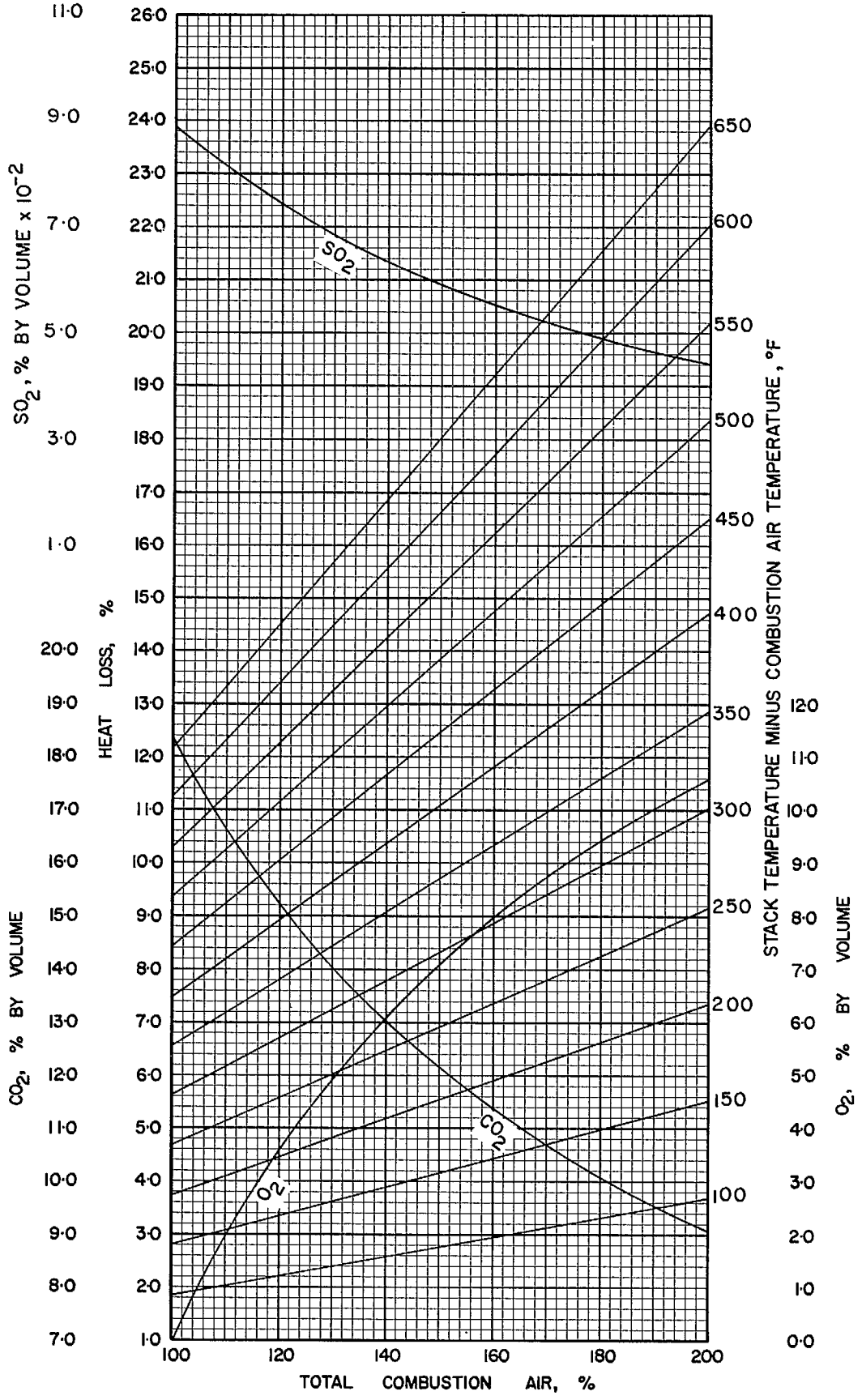

FIGURE 3· DRY FLUE GAS LOSS FOR A RANGE OF TEMPERATURE DIFFERENTIALS

US·P·7

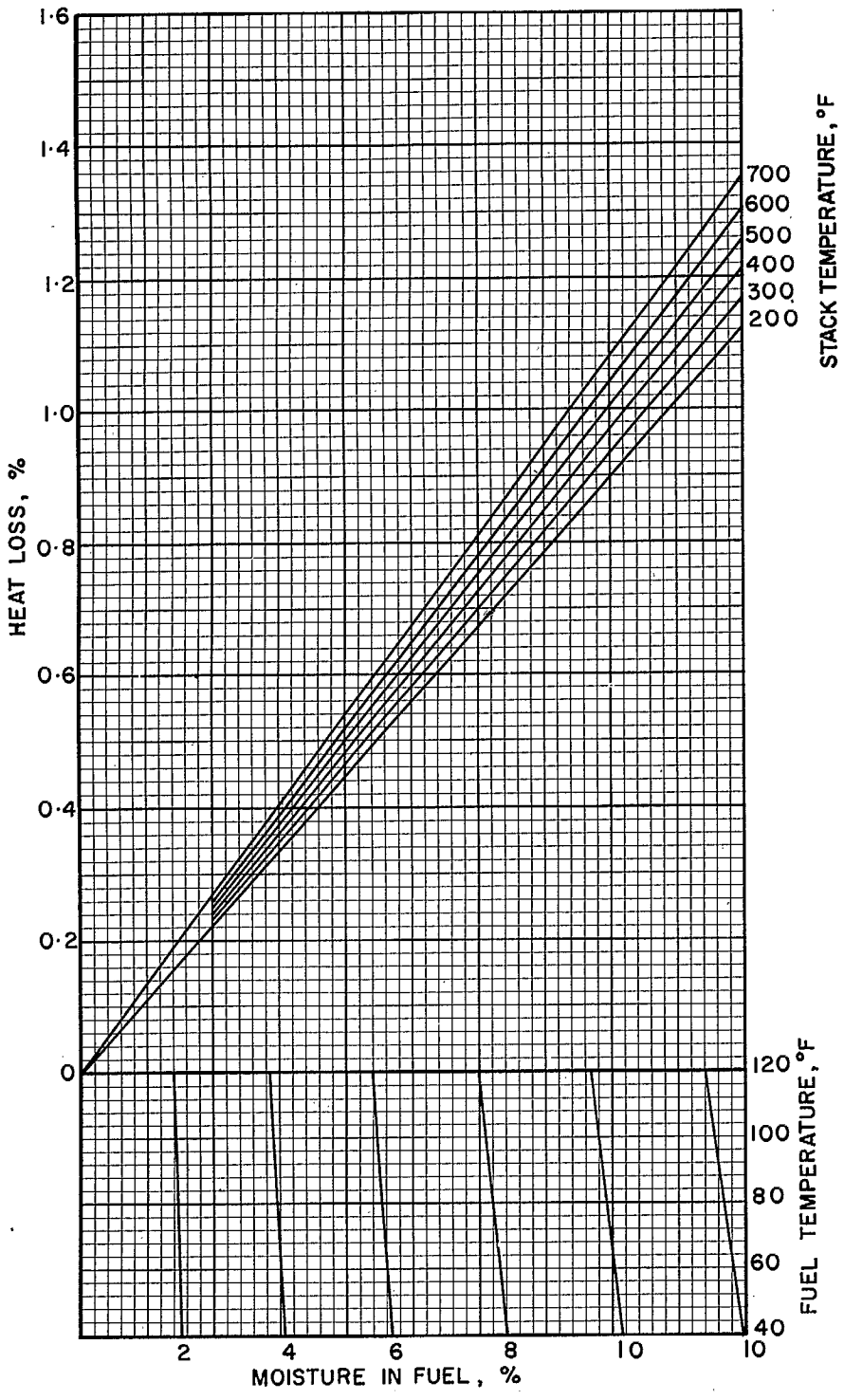

FIGURE 4 · HEAT LOSS DUE TO MOISTURE IN COAL

US·P·7

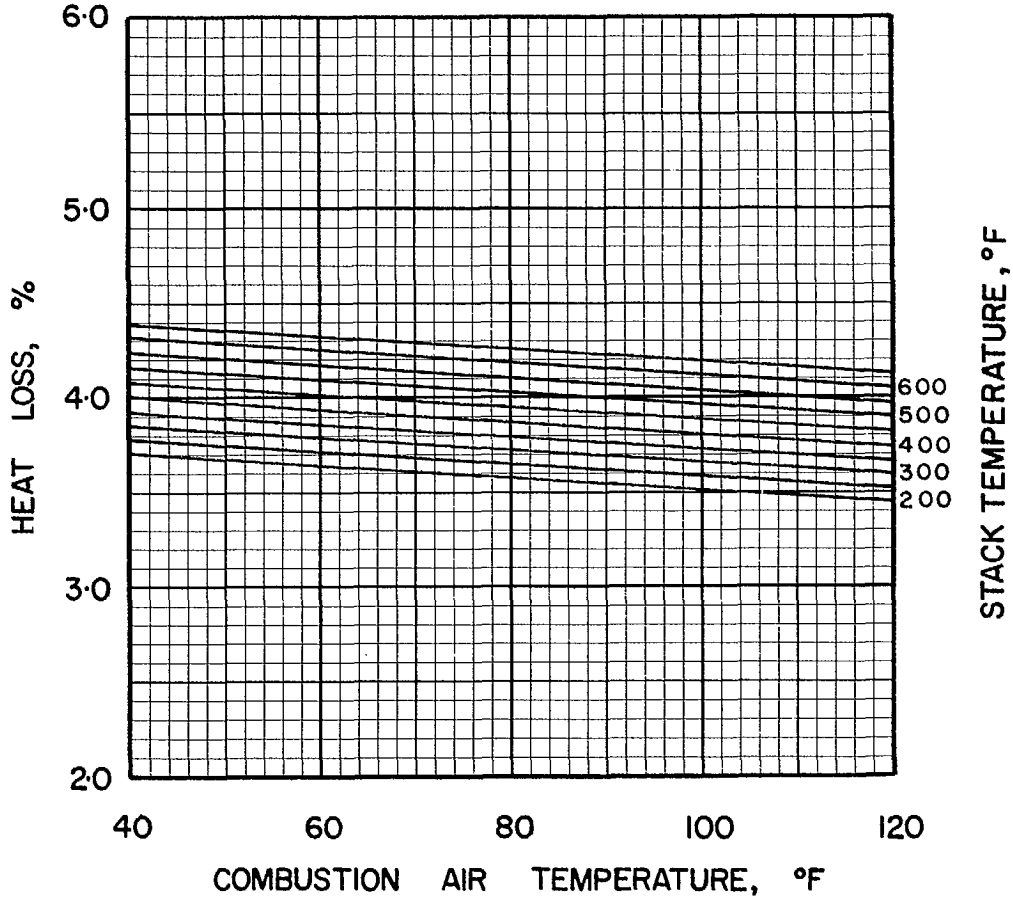

FIGURE 5· HYDROGEN LOSS FOR A RANGE OF STACK TEMPERATURES

US·P·7

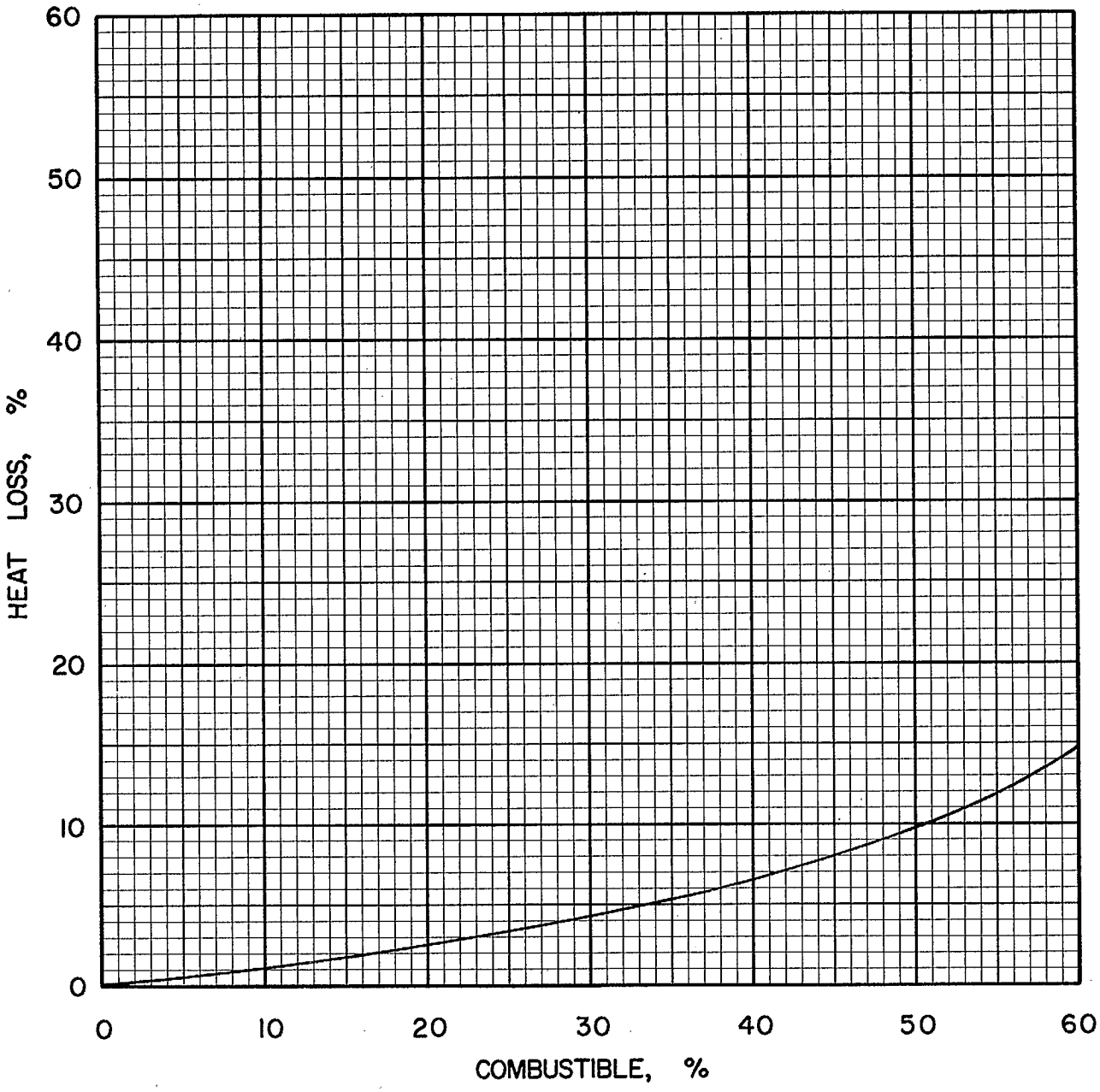

FIGURE 6 HEAT LOSS FOR A RANGE OF COMBUSTIBLE CONCENTRATIONS IN REFUSE

US·P·7

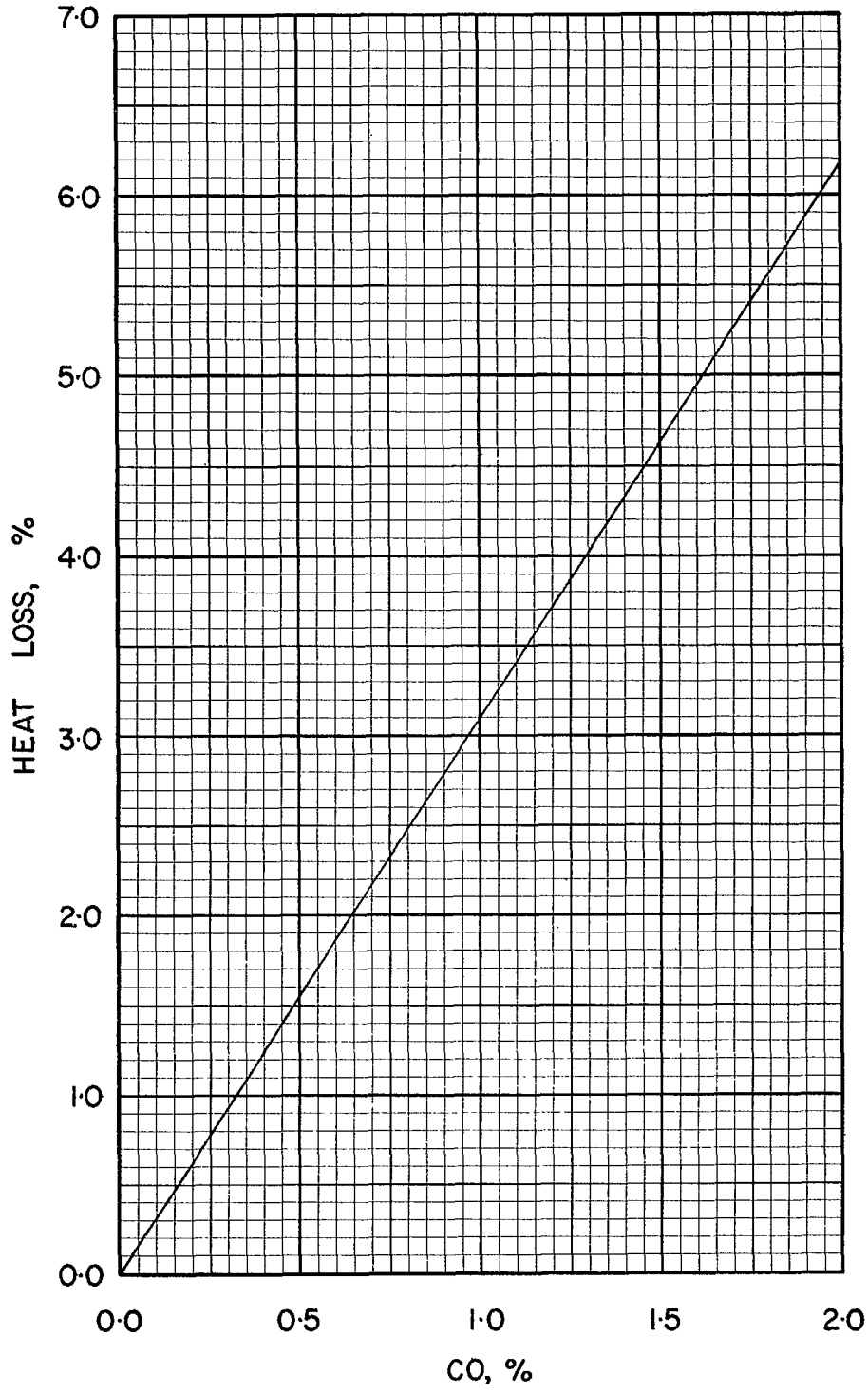

FIGURE 7 · HEAT LOSS FOR A RANGE OF CO CONCENTRATIONS, ASSUMING NEGLIGIBLE EXCESS AIR

US·P·7

COAL US P-8, JOANNE

Typical Moisture Range: 0–8%

Proximate Analysis (lb/lb dry coal)

Ash	0.071
Volatile Matter	0.402
Fixed Carbon	0.527
Total	1.000

Ultimate Analysis (lb/lb dry coal)

Carbon (C)	0.775
Hydrogen (H)	0.052
Sulphur (S)	0.027
Nitrogen (N)	0.015
Oxygen (O)	0.060
Ash	0.071
Total	1.000

Gross Calorific Value

Btu/lb:	14065
Btu/short ton:	28.13×10^6
Btu/long ton:	31.51×10^6
MJ/kg:	32.71

Conversion Factors

1 short ton = 0.8929 long tons = 2000 lb
10^6 Btu = 71.11 lb
10^6 Btu = 0.03555 short tons
10^6 Btu = 0.03174 long tons

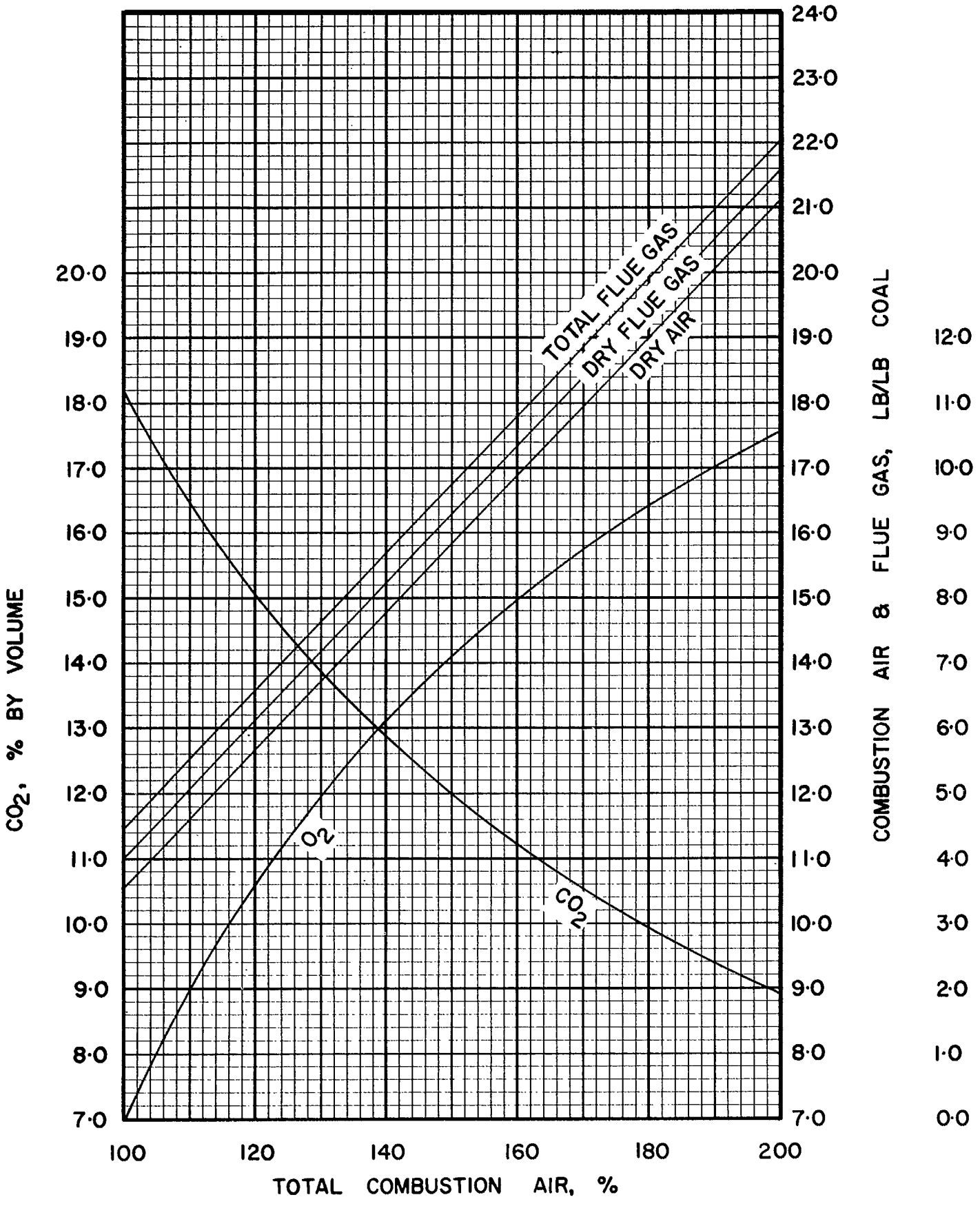

FIGURE 1· COMBUSTION DATA, WEIGHT BASIS

US·P·8

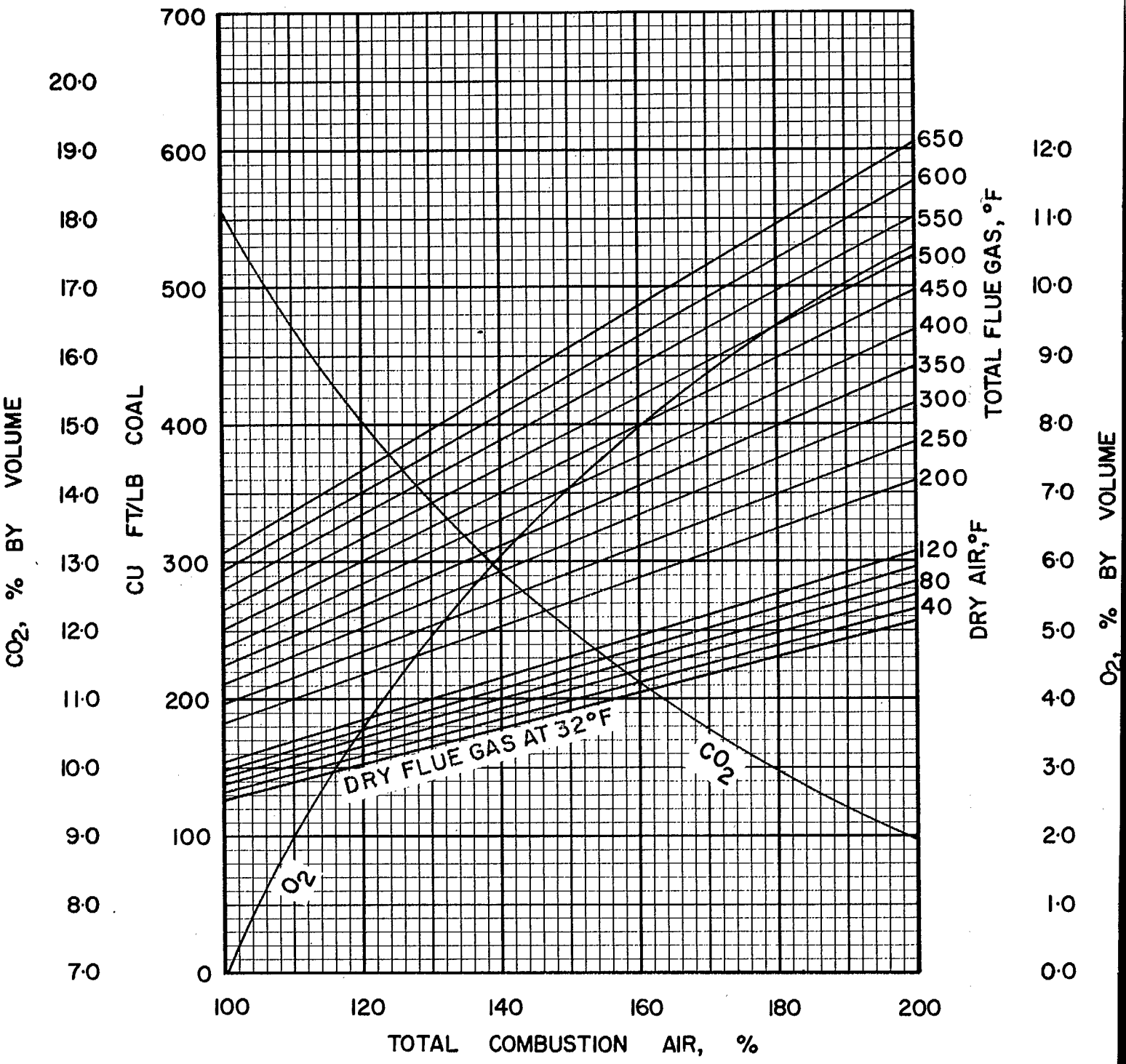

FIGURE 2· COMBUSTION DATA, VOLUME BASIS

US·P·8

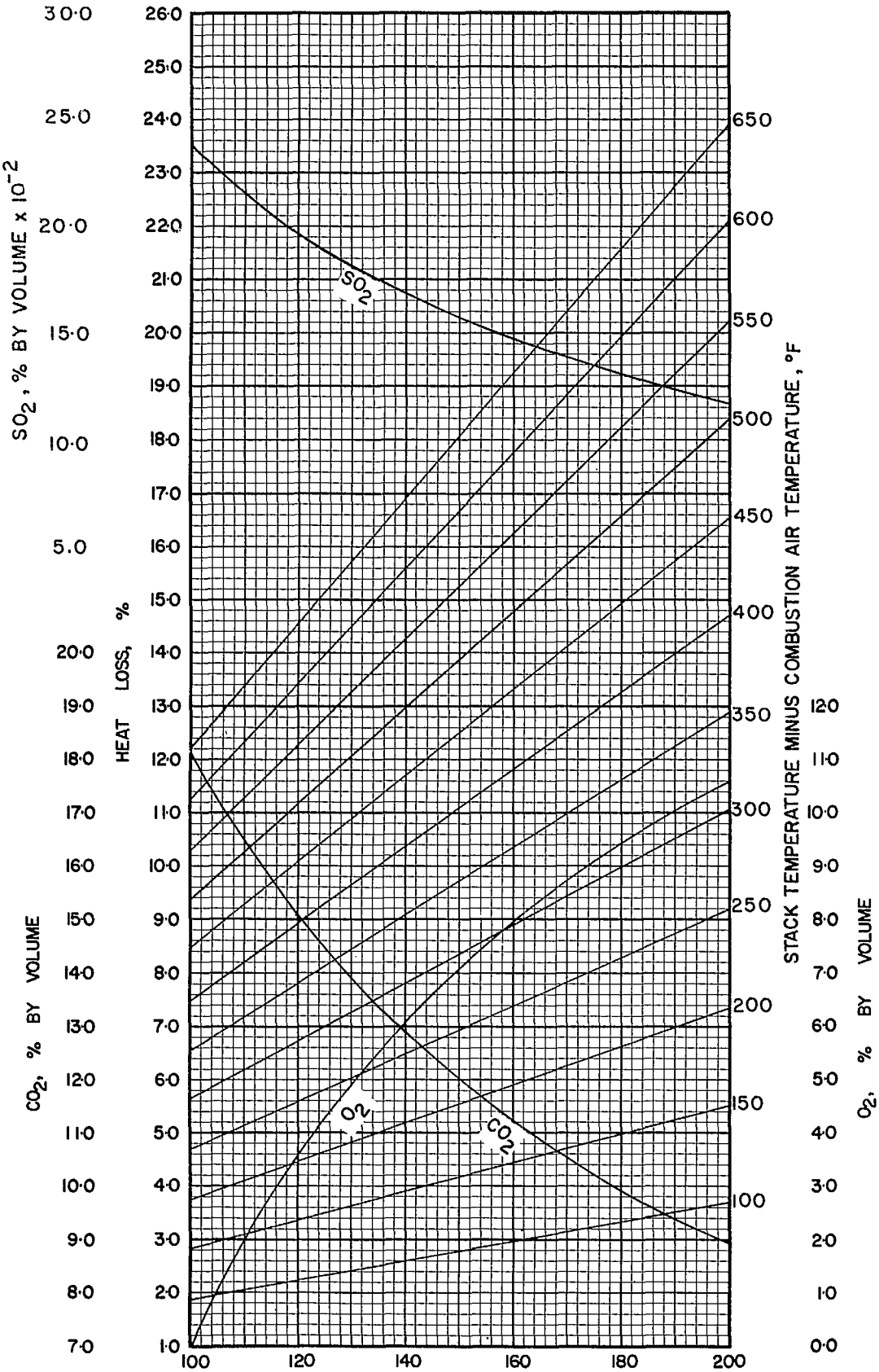

FIGURE 3· DRY FLUE GAS LOSS FOR A RANGE OF TEMPERATURE DIFFERENTIALS

US·P·8

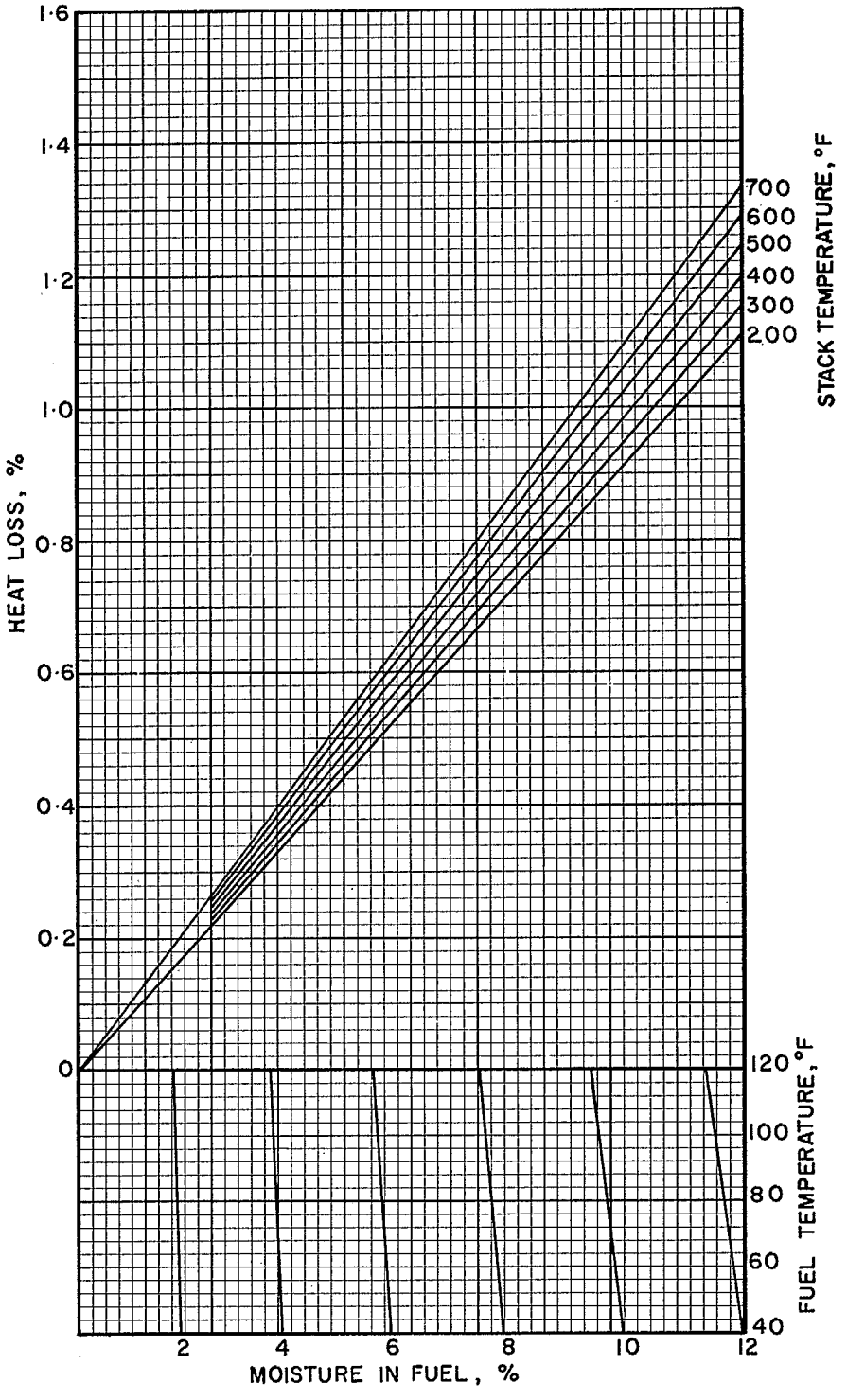

FIGURE 4· HEAT LOSS DUE TO MOISTURE IN COAL

US·P·8

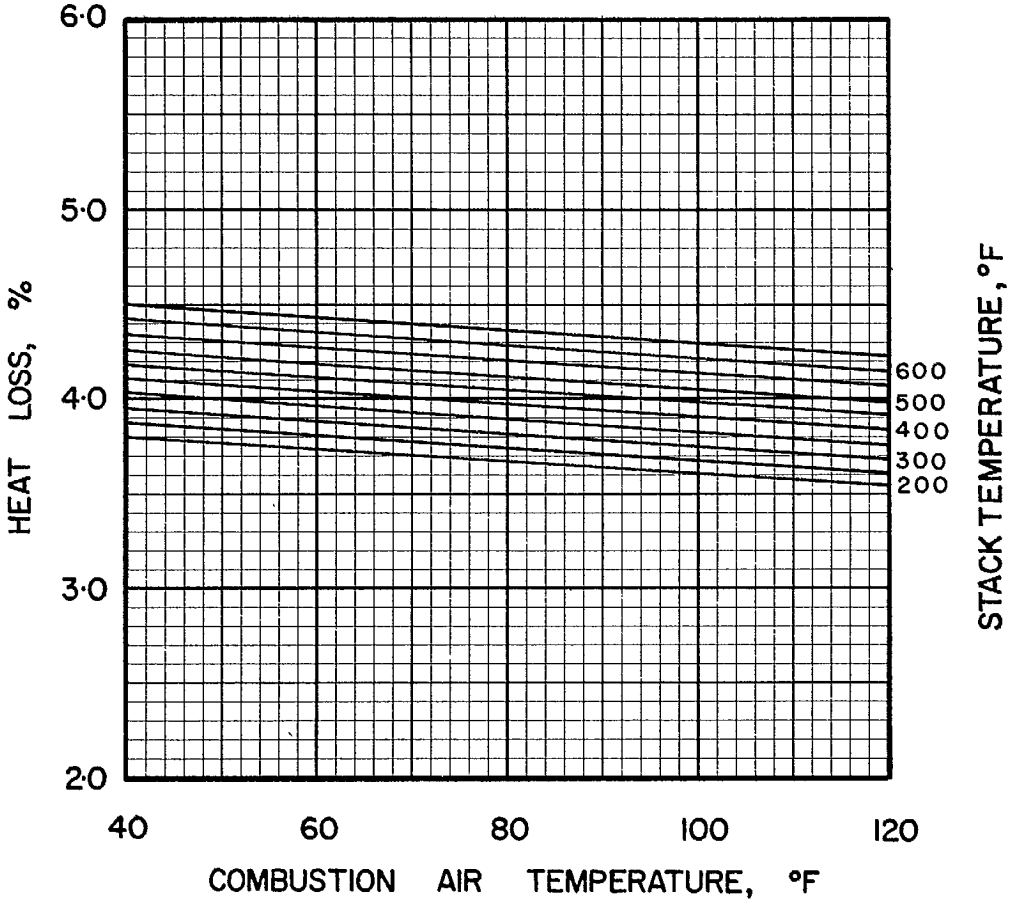

FIGURE 5· HYDROGEN LOSS FOR A RANGE OF STACK TEMPERATURES

US·P·8

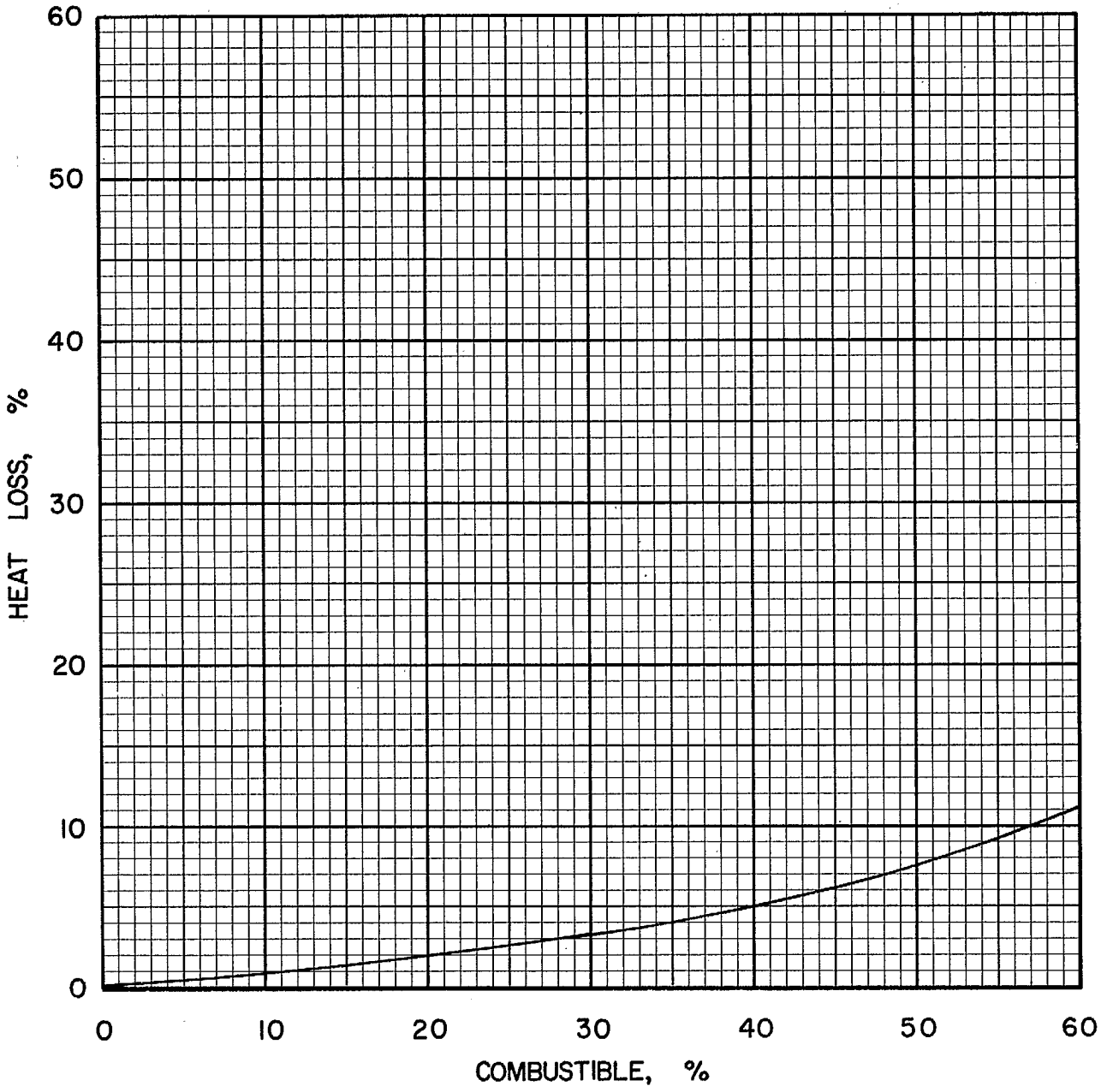

FIGURE 6 HEAT LOSS FOR A RANGE OF COMBUSTIBLE CONCENTRATIONS IN REFUSE

US·P·8

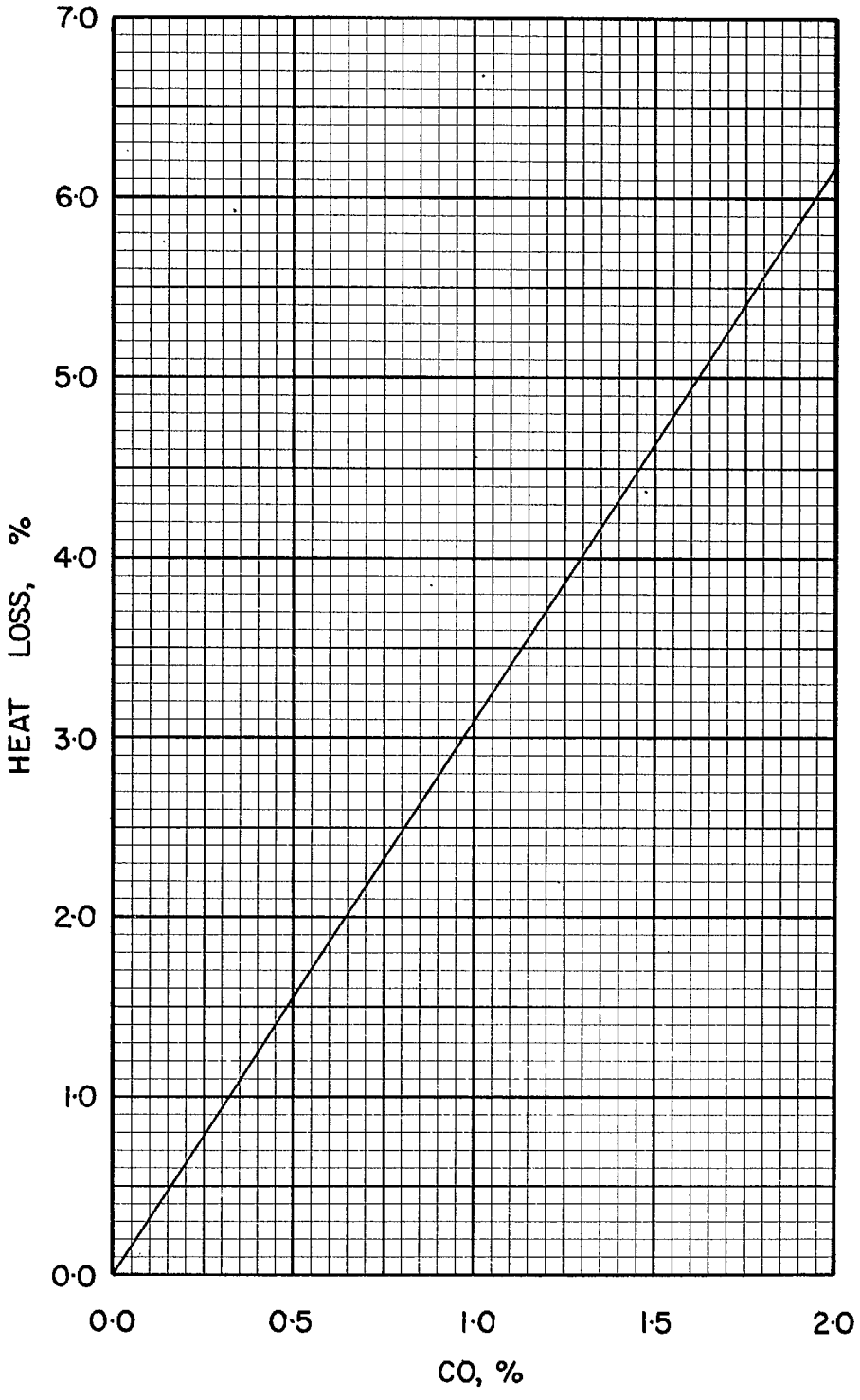

FIGURE 7 · HEAT LOSS FOR A RANGE OF CO CONCENTRATIONS, ASSUMING NEGLIGIBLE EXCESS AIR

US·P·8

COAL US P-9, MATHIES, WASHINGTON COUNTY

Typical Moisture Range: 0--8%

Proximate Analysis (lb/lb dry coal)

Ash	0.076
Volatile Matter	0.370
Fixed Carbon	0.554
Total	1.000

Ultimate Analysis (lb/lb dry coal)

Carbon (C)	0.766
Hydrogen (H)	0.052
Sulphur (S)	0.017
Nitrogen (N)	0.014
Oxygen (O)	0.075
Ash	0.076
Total	1.000

Gross Calorific Value

Btu/lb:	13930
Btu/short ton:	27.86×10^6
Btu/long ton:	31.20×10^6
MJ/kg:	32.39

Conversion Factors

1 short ton = 0.8929 long tons = 2000 lb
10^6 Btu = 71.78 lb
10^6 Btu = 0.03589 short tons
10^6 Btu = 0.03205 long tons

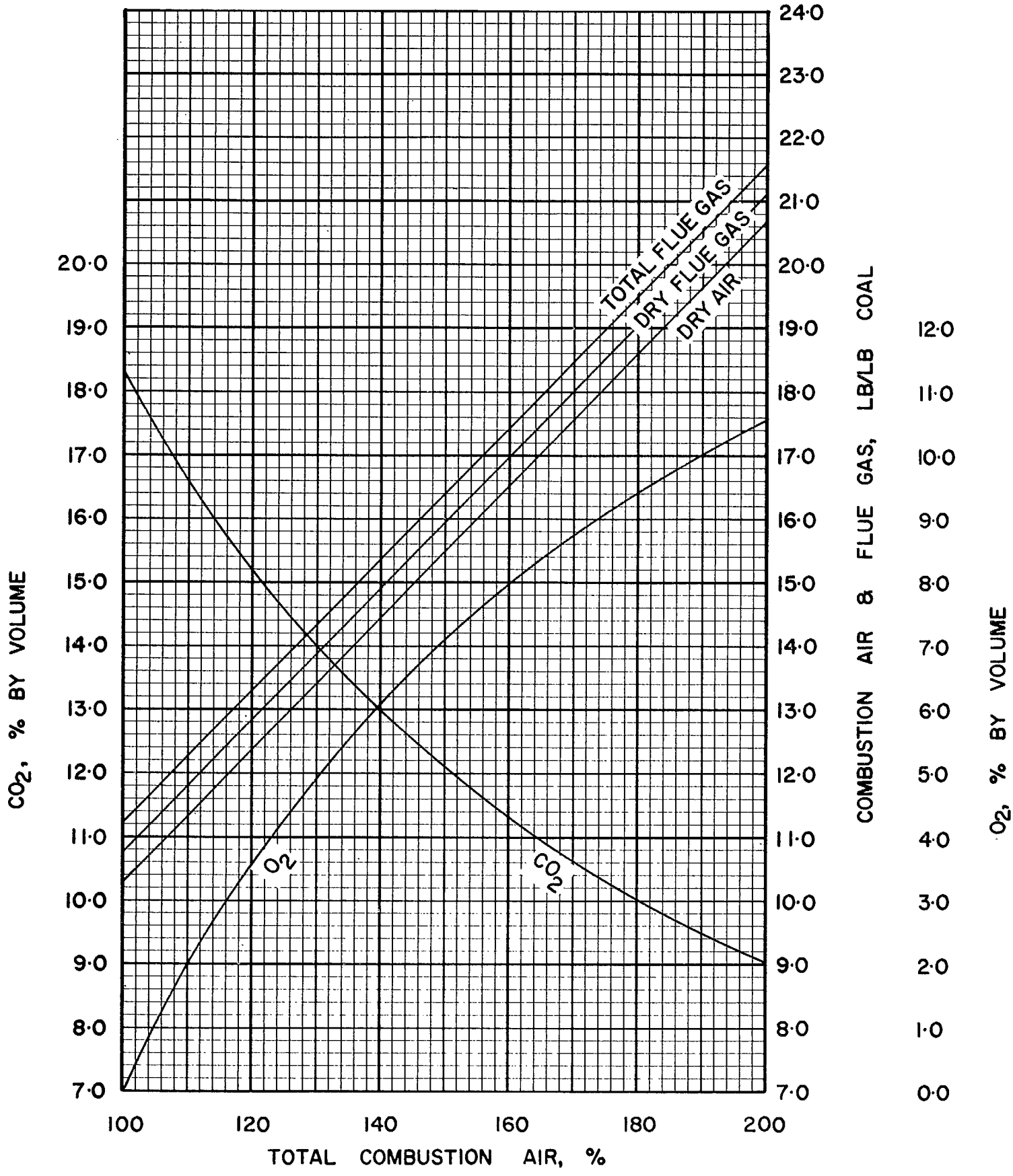

FIGURE 1· COMBUSTION DATA, WEIGHT BASIS

US·P·9

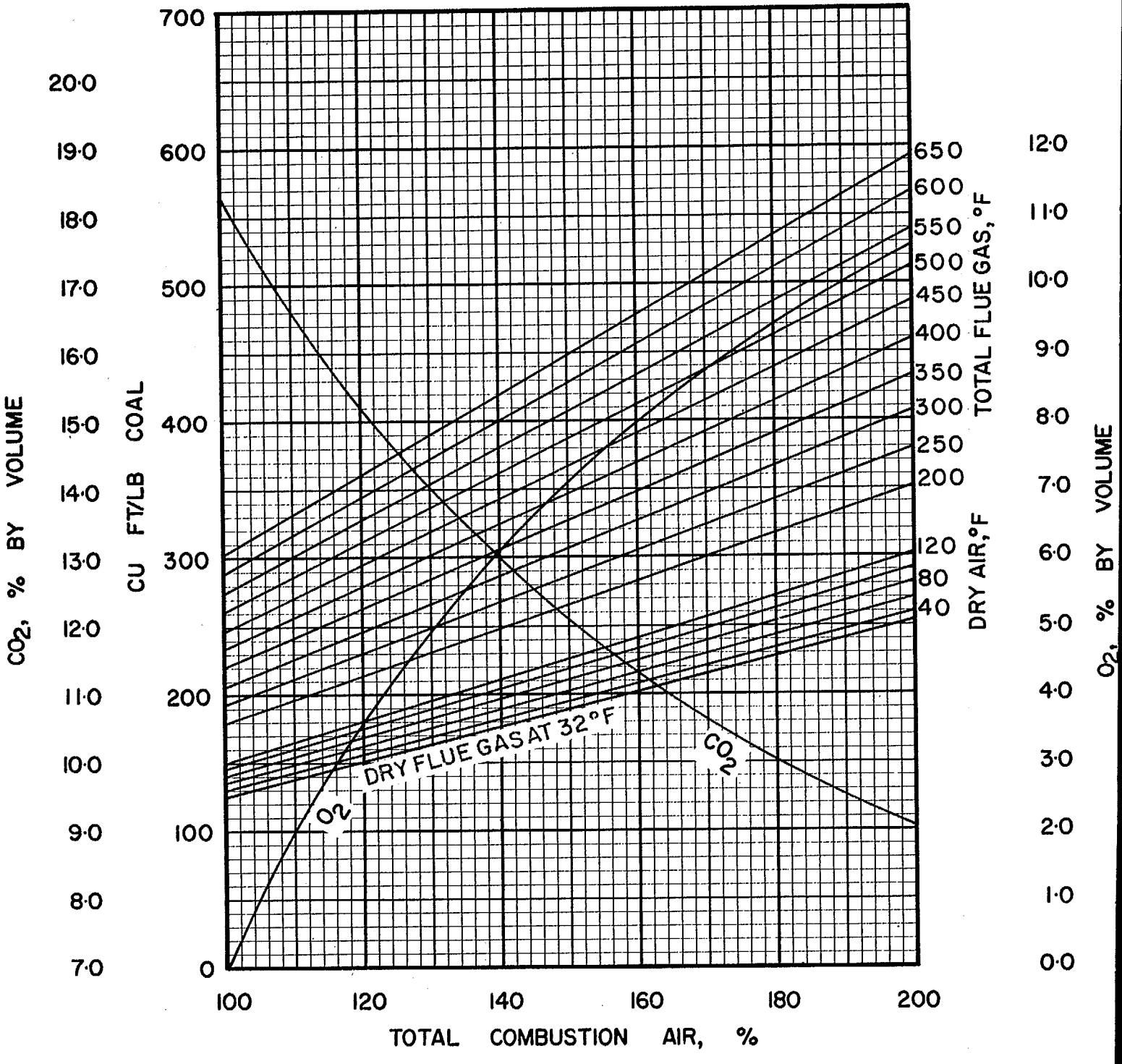

FIGURE 2· COMBUSTION DATA, VOLUME BASIS

US·P·9

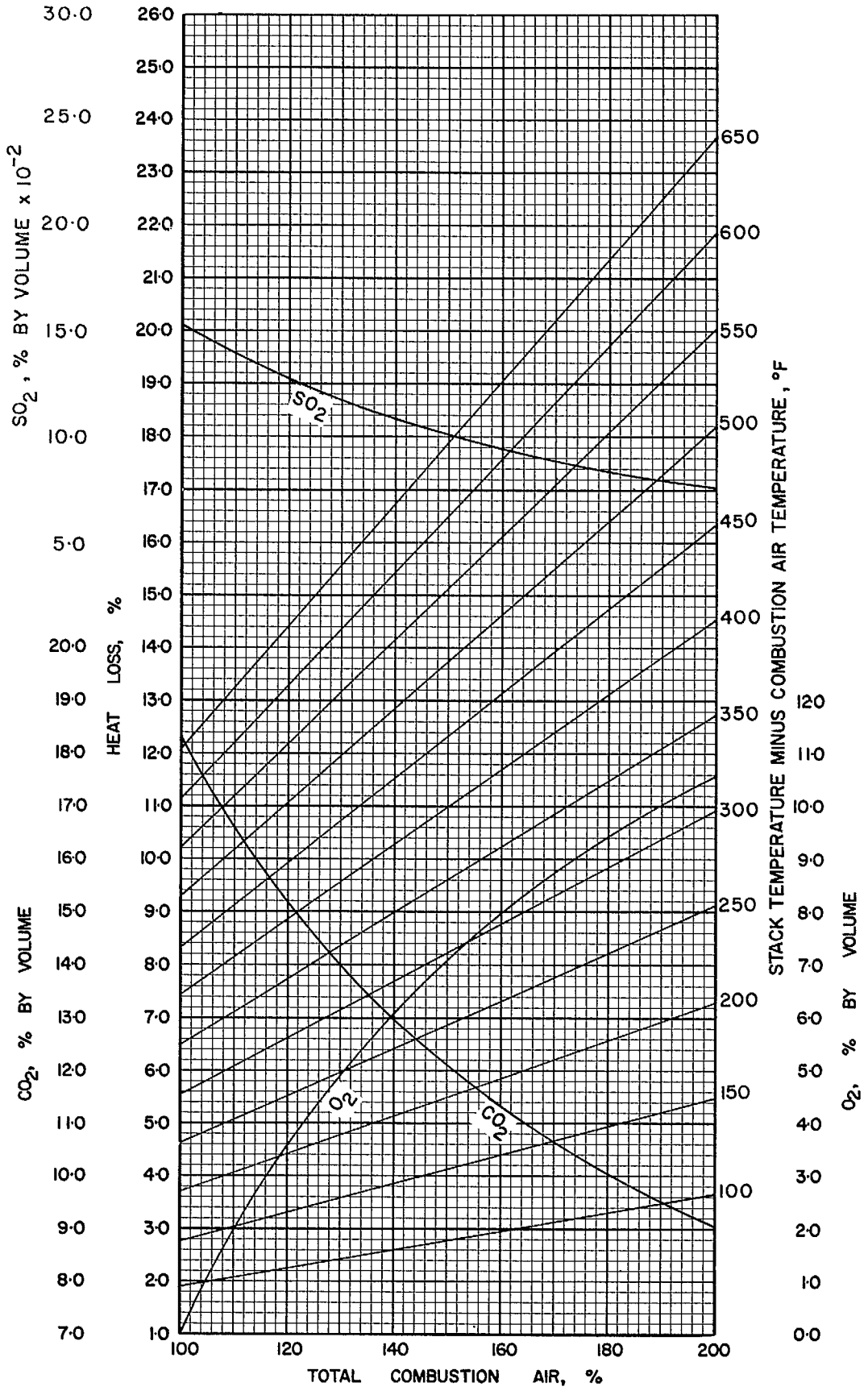

FIGURE 3· DRY FLUE GAS LOSS FOR A RANGE OF TEMPERATURE DIFFERENTIALS

US·P·9

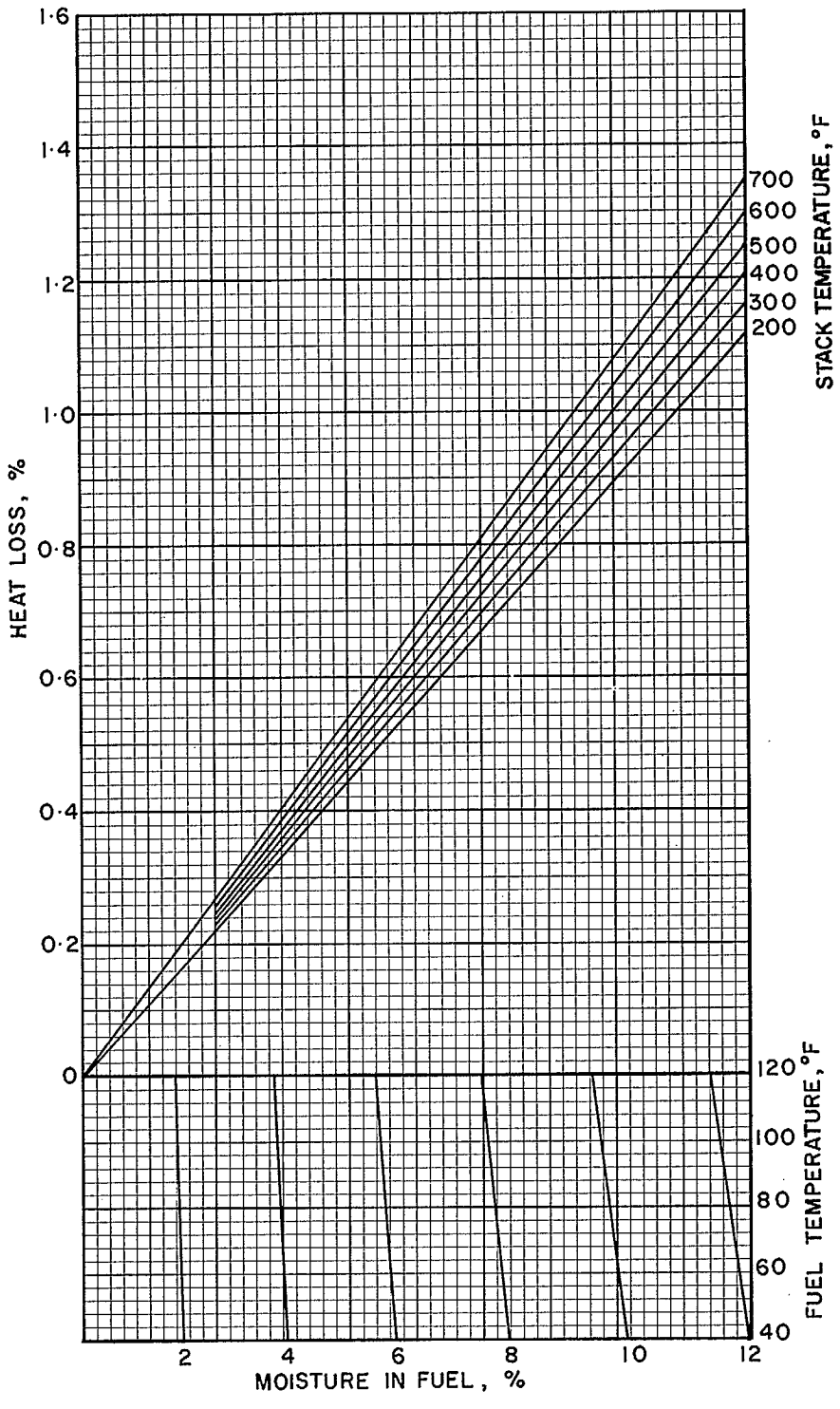

FIGURE 4· HEAT LOSS DUE TO MOISTURE IN COAL

US·P·9

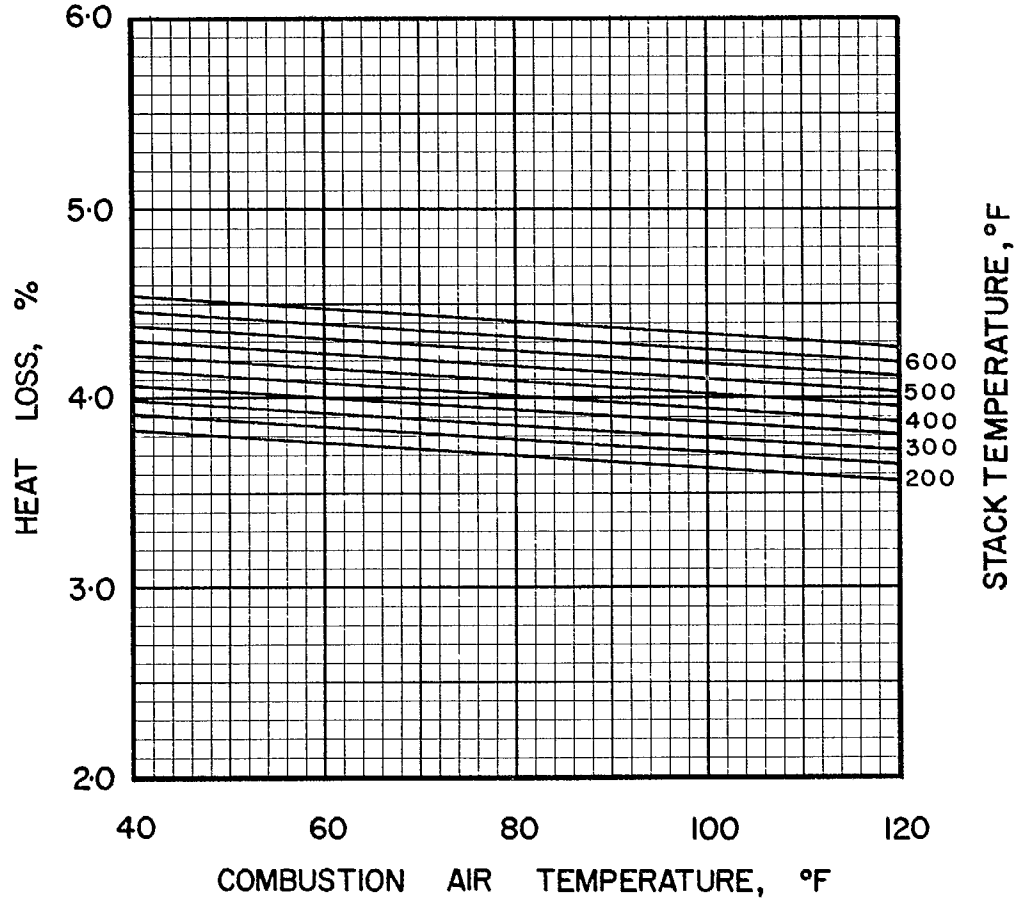

FIGURE 5· HYDROGEN LOSS FOR A RANGE OF STACK TEMPERATURES

US·P·9

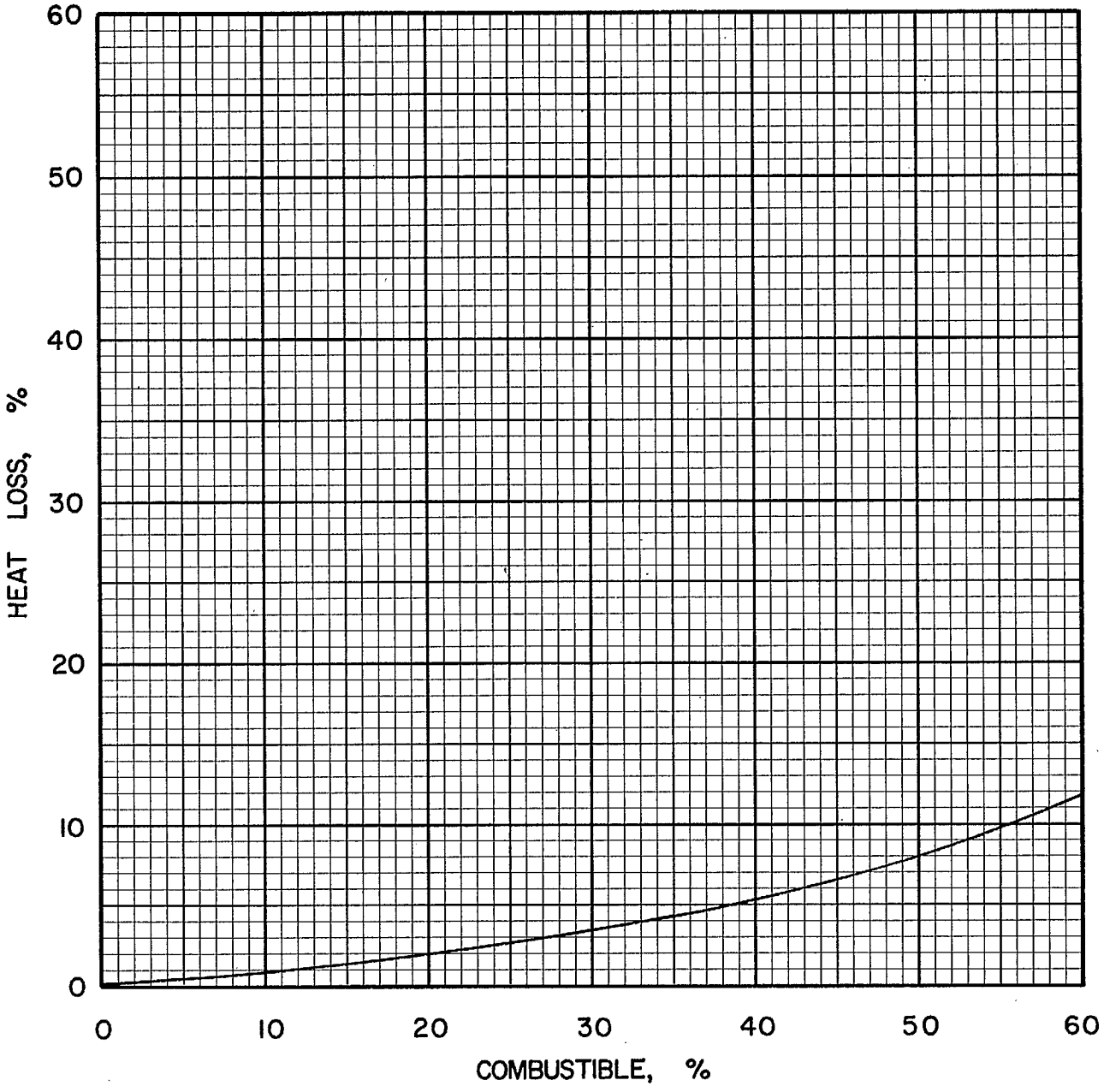

FIGURE 6 HEAT LOSS FOR A RANGE OF COMBUSTIBLE CONCENTRATIONS IN REFUSE

US·P·9

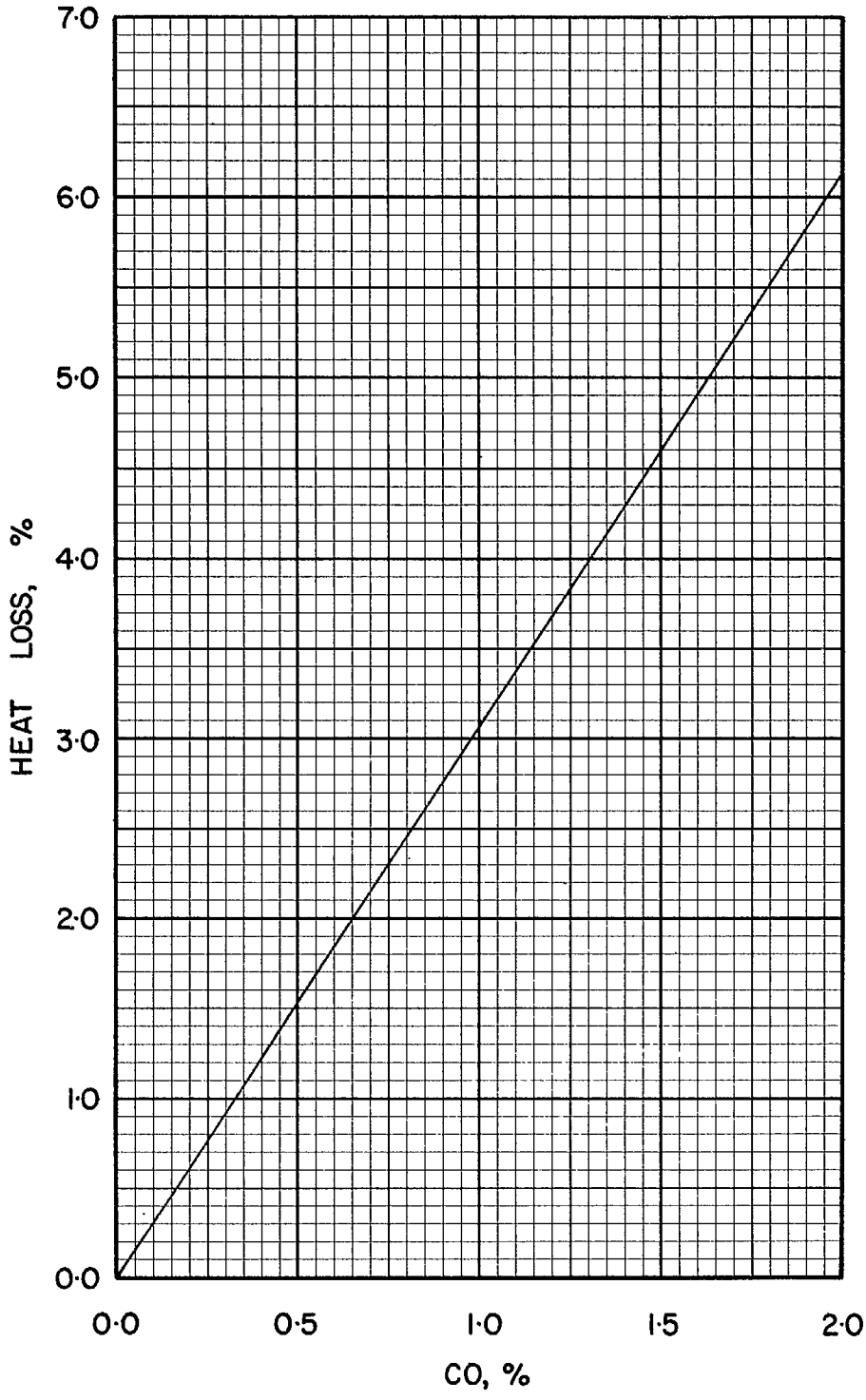

FIGURE 7 · HEAT LOSS FOR A RANGE OF CO CONCENTRATIONS, ASSUMING NEGLIGIBLE EXCESS AIR

US·P·9

COAL US P-10, MARGARET, FREEPORT SEAM

Typical Moisture Range: 0–8%

Proximate Analysis (lb/lb dry coal)

Ash	0.094
Volatile Matter	0.371
Fixed Carbon	0.535
Total	1.000

Ultimate Analysis (lb/lb dry coal)

Carbon (C)	0.788
Hydrogen (H)	0.048
Sulphur (S)	0.018
Nitrogen (N)	0.017
Oxygen (O)	0.035
Ash	0.094
Total	1.000

Gross Calorific Value

Btu/lb:	13600
Btu/short ton:	27.20×10^6
Btu/long ton:	30.46×10^6
MJ/kg:	31.63

Conversion Factors

1 short ton = 0.8929 long tons = 2000 lb
10^6 Btu = 73.53 lb
10^6 Btu = 0.03676 short tons
10^6 Btu = 0.03283 long tons

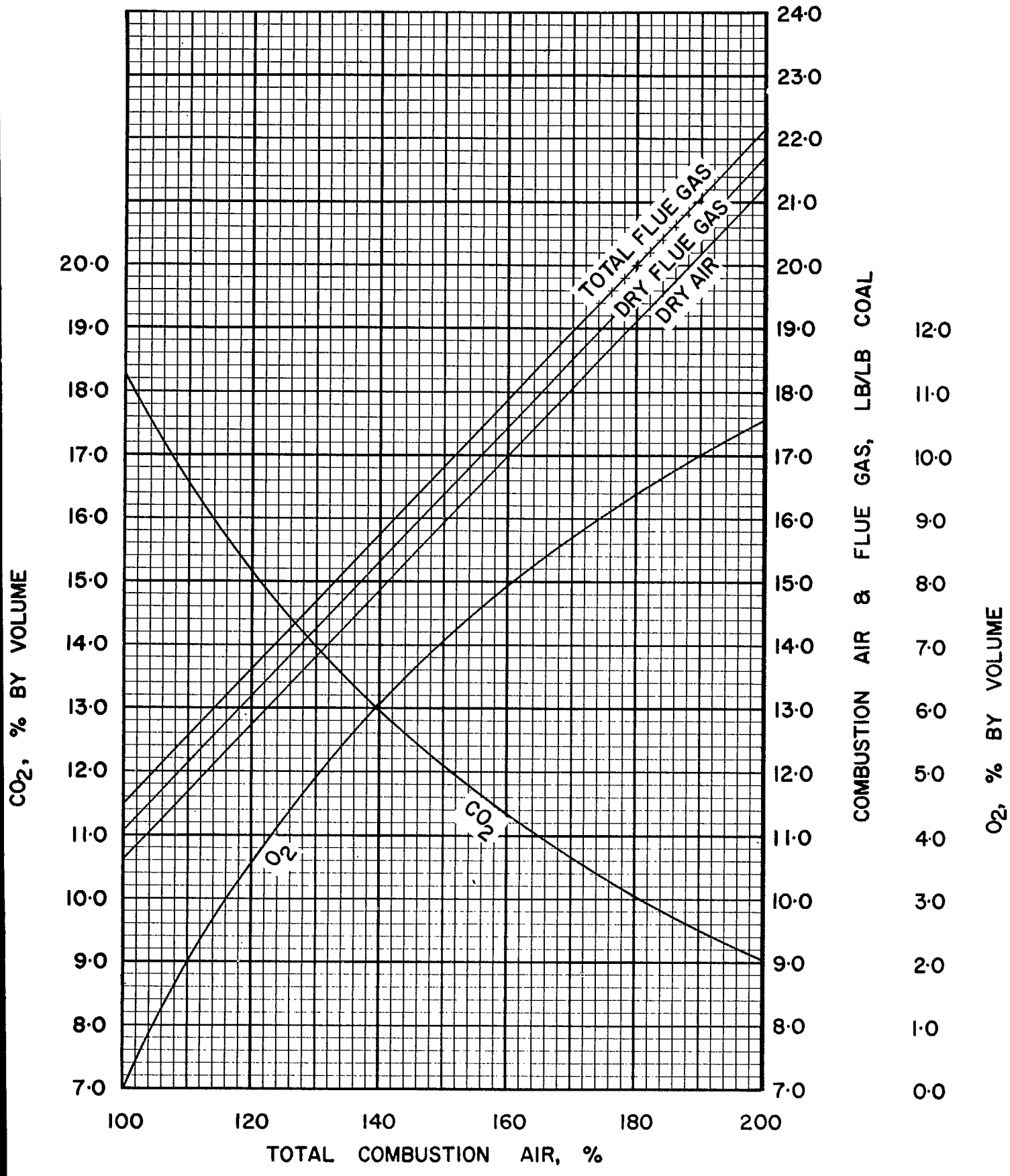

FIGURE 1· COMBUSTION DATA, WEIGHT BASIS

US·P·10

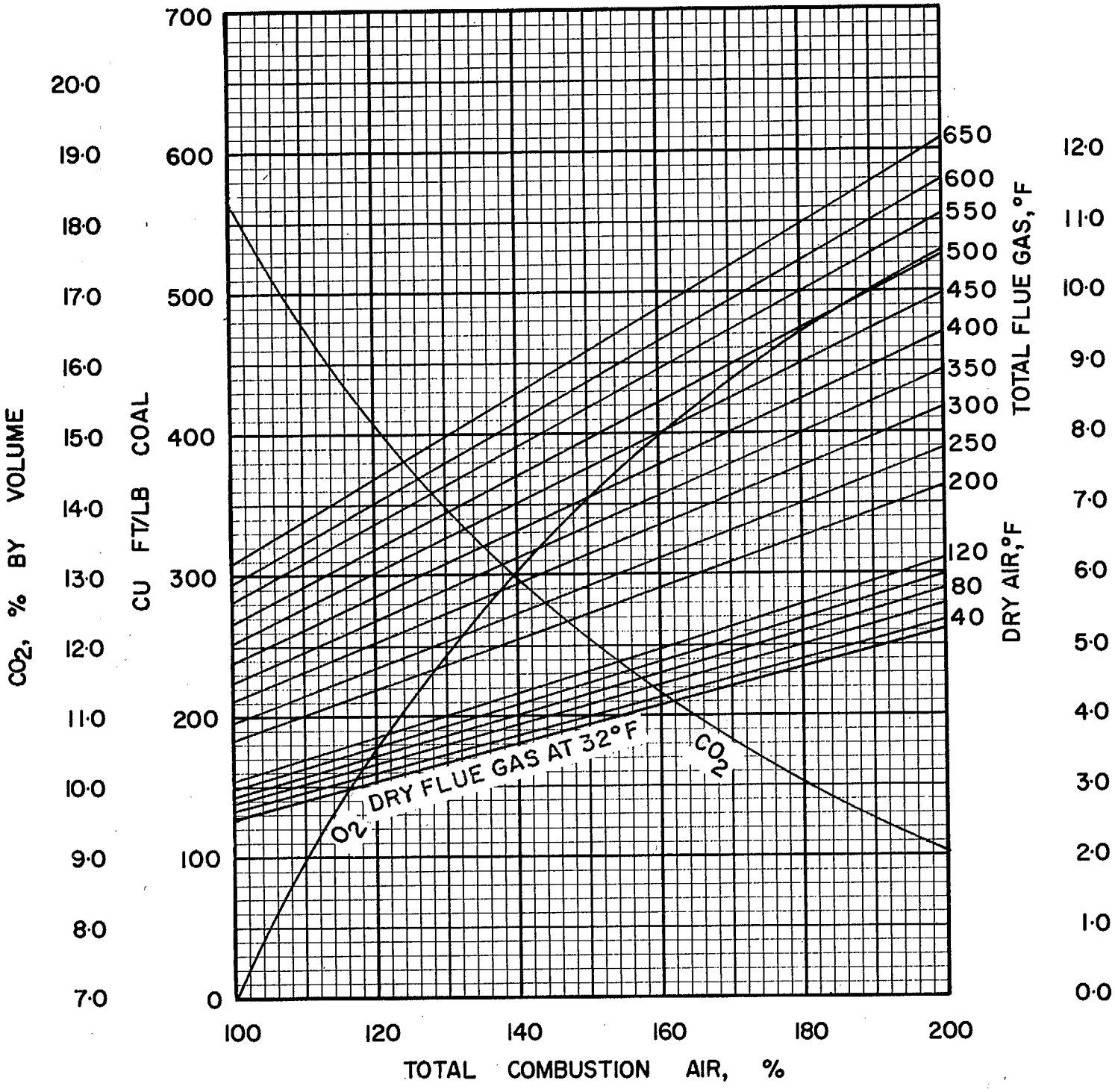

FIGURE 2· COMBUSTION DATA, VOLUME BASIS

US·P·10

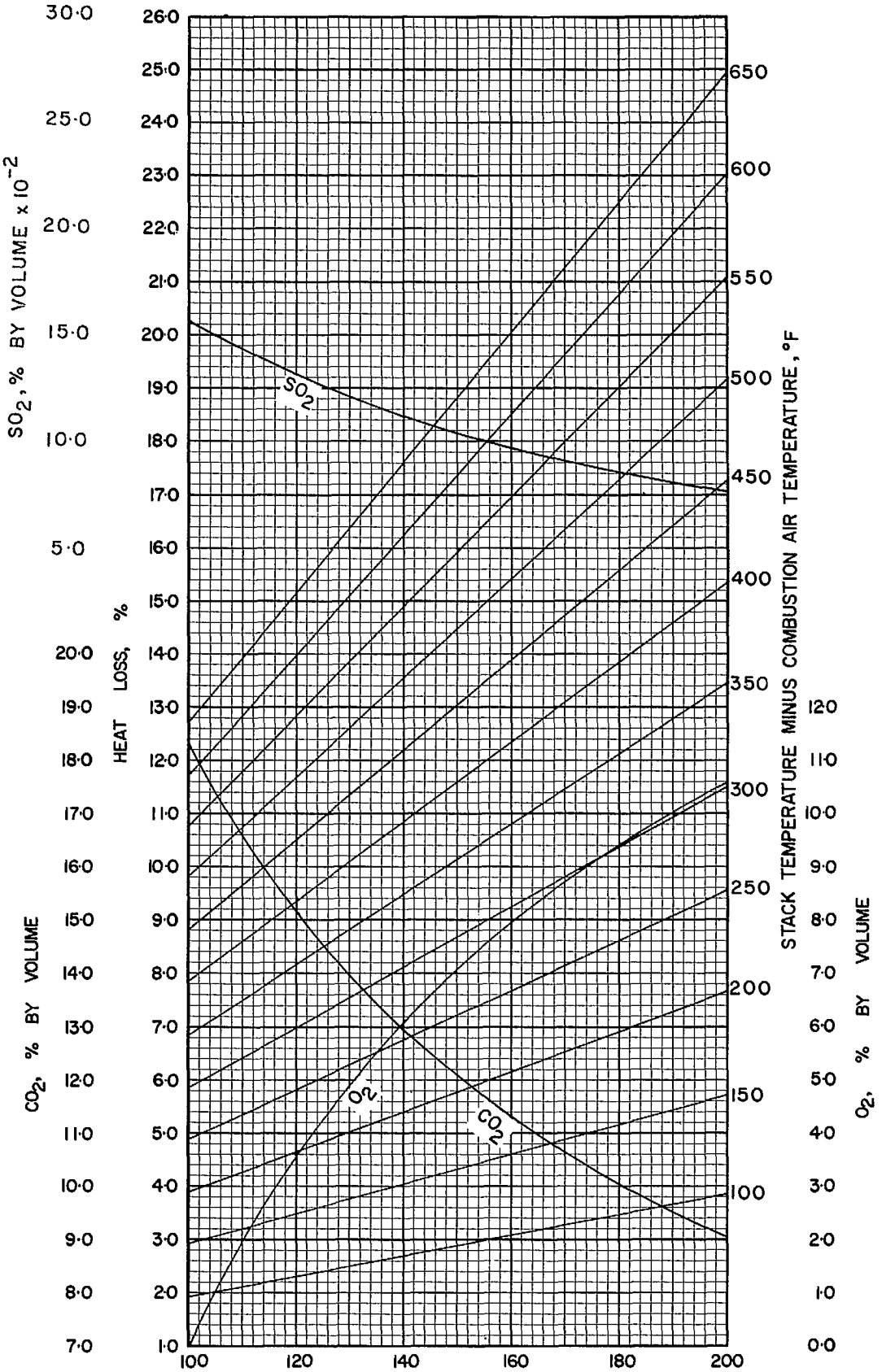

FIGURE 3· DRY FLUE GAS LOSS FOR A RANGE OF TEMPERATURE DIFFERENTIALS

US·P·10

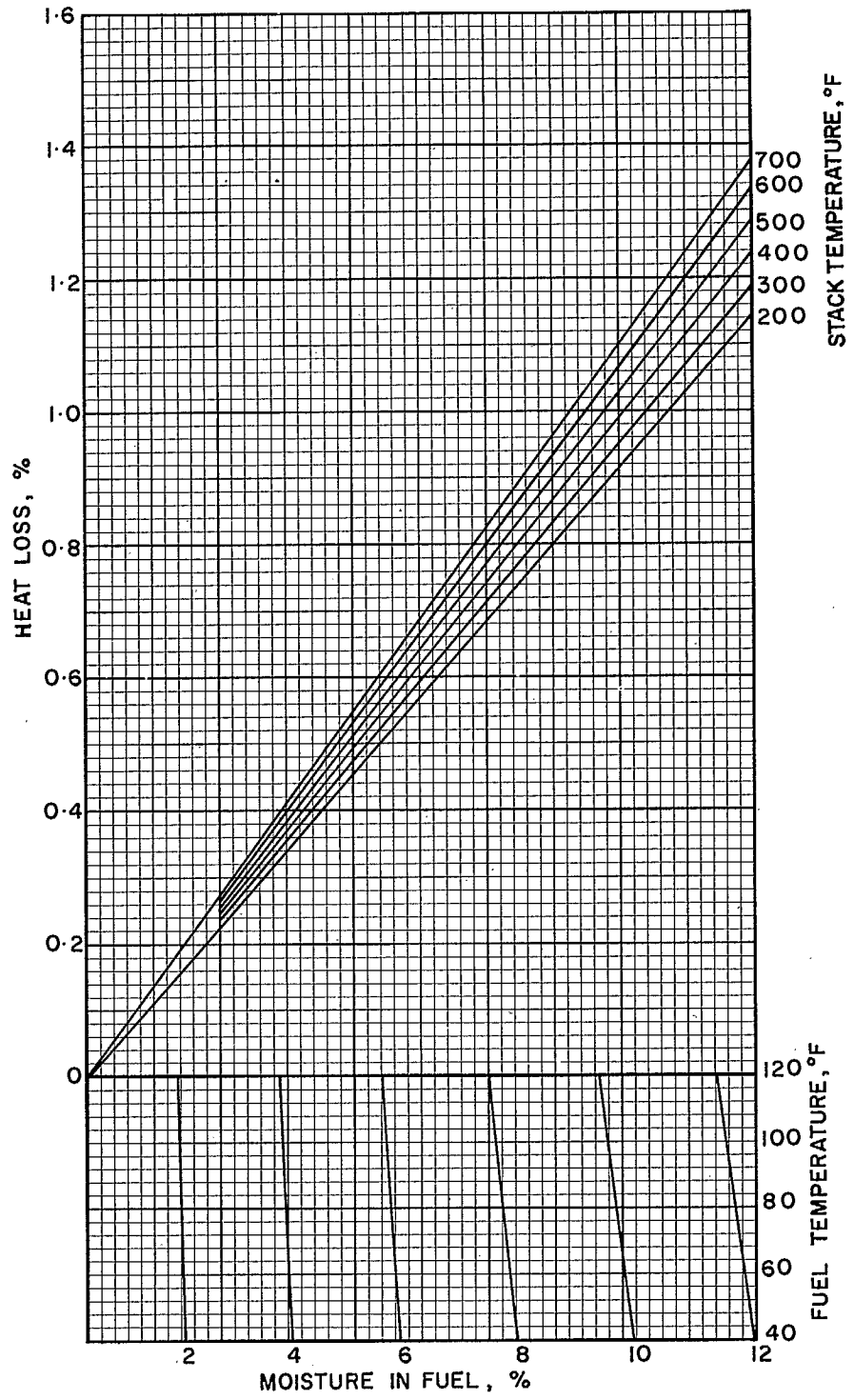

FIGURE 4· HEAT LOSS DUE TO MOISTURE IN COAL

US·P·10

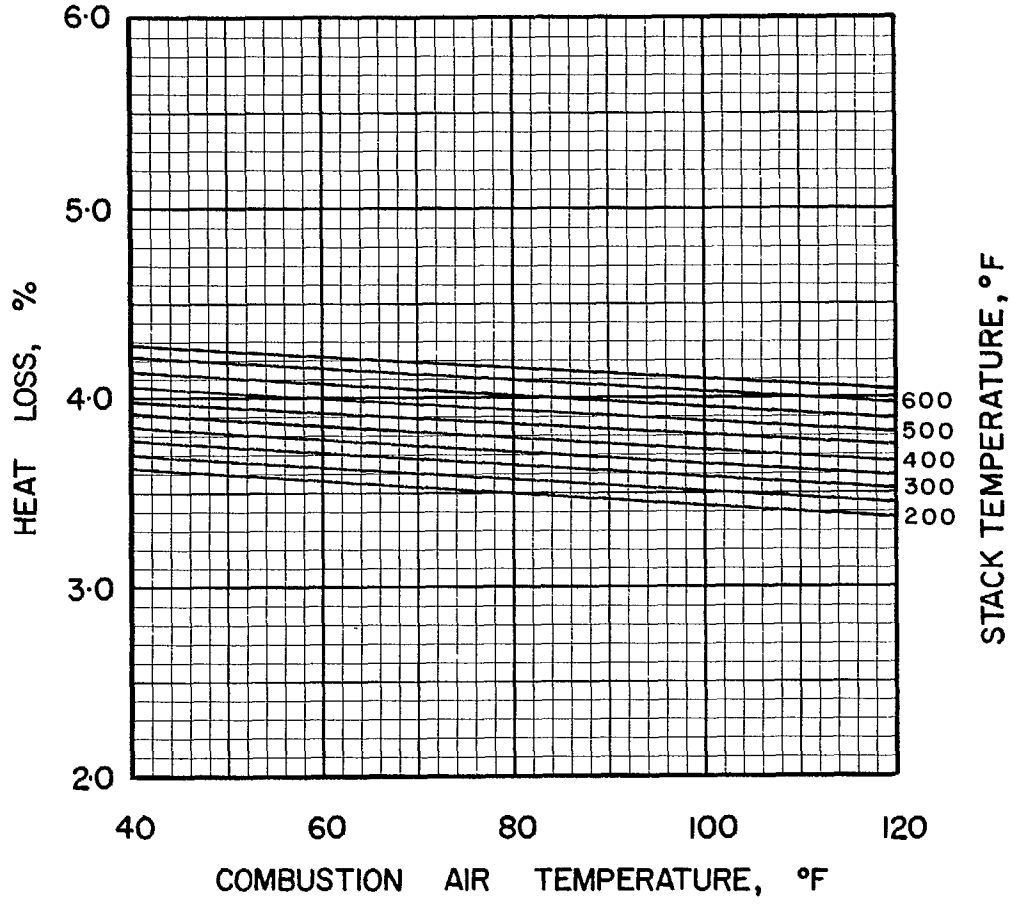

FIGURE 5· HYDROGEN LOSS FOR A RANGE OF STACK TEMPERATURES

US·P·10

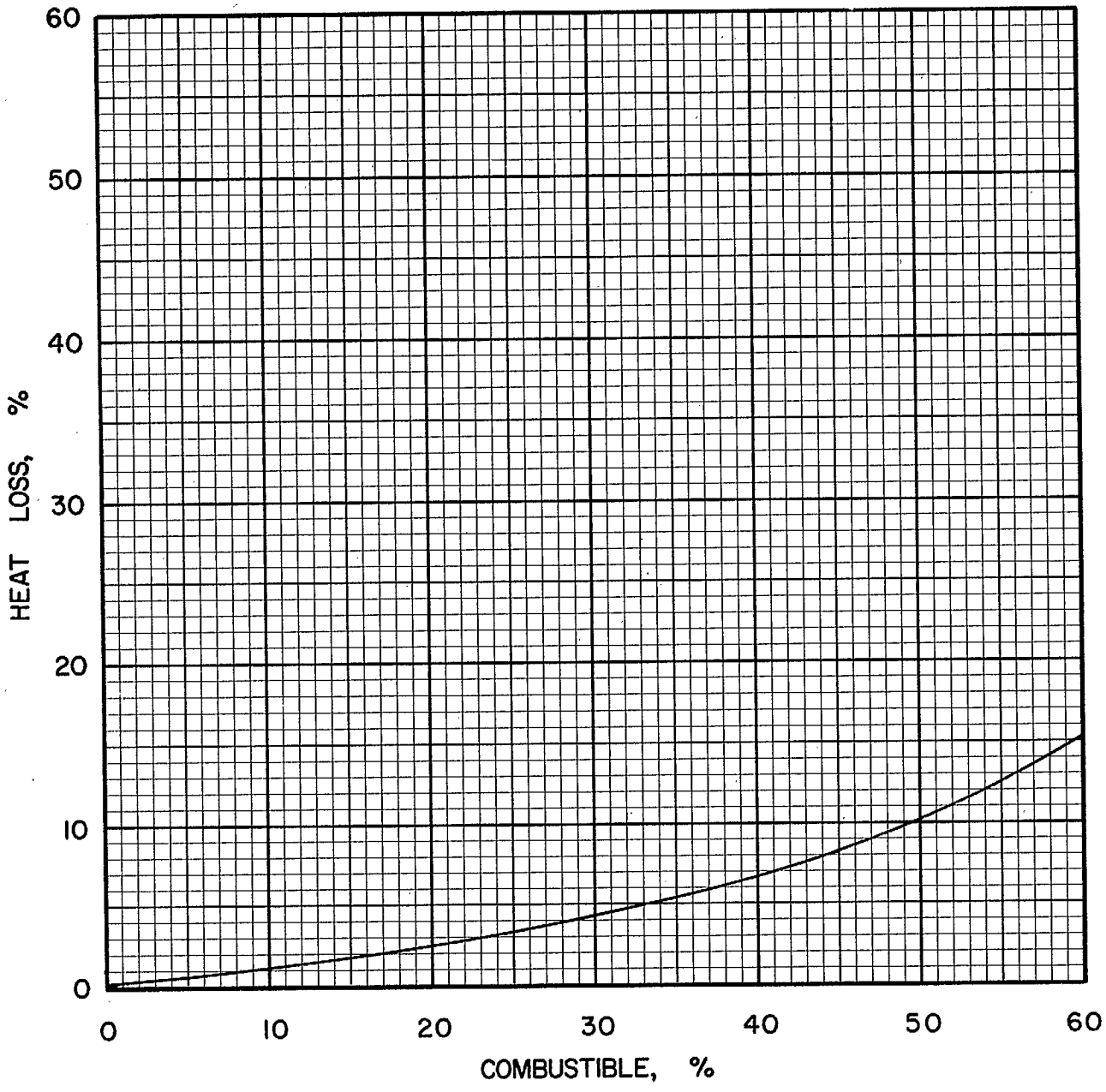

FIGURE 6 HEAT LOSS FOR A RANGE OF COMBUSTIBLE CONCENTRATIONS IN REFUSE

US·P·10

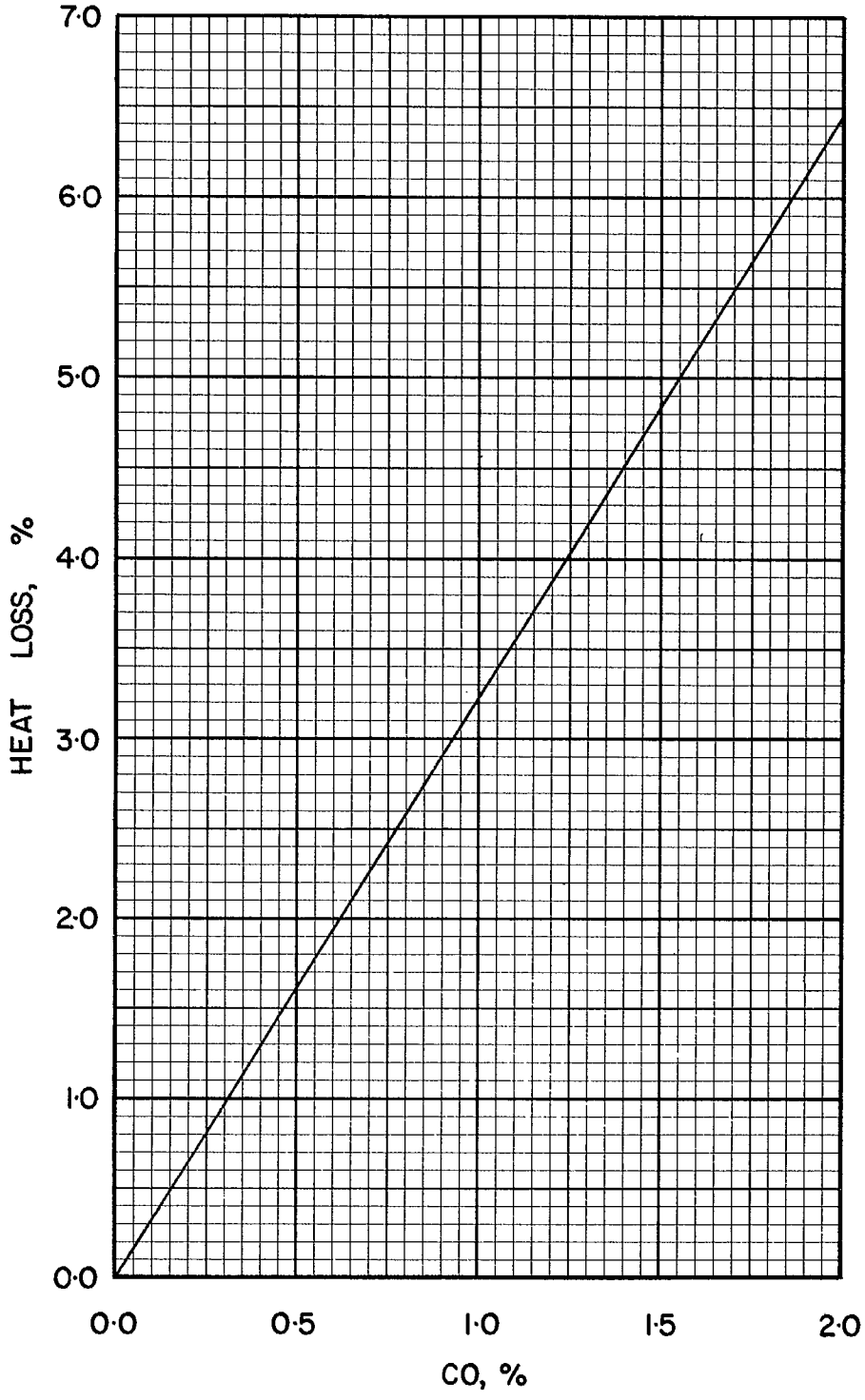

FIGURE 7 · HEAT LOSS FOR A RANGE OF CO CONCENTRATIONS, ASSUMING NEGLIGIBLE EXCESS AIR

US·P·10

COAL US P-11, PILGRIM, LAWRENCE COUNTY

Typical Moisture Range: 4–12%

Proximate Analysis (lb/lb dry coal)

Ash	0.082
Volatile Matter	0.349
Fixed Carbon	0.569
Total	1.000

Ultimate Analysis (lb/lb dry coal)

Carbon (C)	0.780
Hydrogen (H)	0.050
Sulphur (S)	0.011
Nitrogen (N)	0.015
Oxygen (O)	0.062
Ash	0.082
Total	1.000

Gross Calorific Value

Btu/lb:	13810
Btu/short ton:	27.62×10^6
Btu/long ton:	30.93×10^6
MJ/kg:	32.11

Conversion Factors

1 short ton = 0.8929 long tons = 2000 lb
10^6 Btu = 72.41 lb
10^6 Btu = 0.03621 short tons
10^6 Btu = 0.03233 long tons

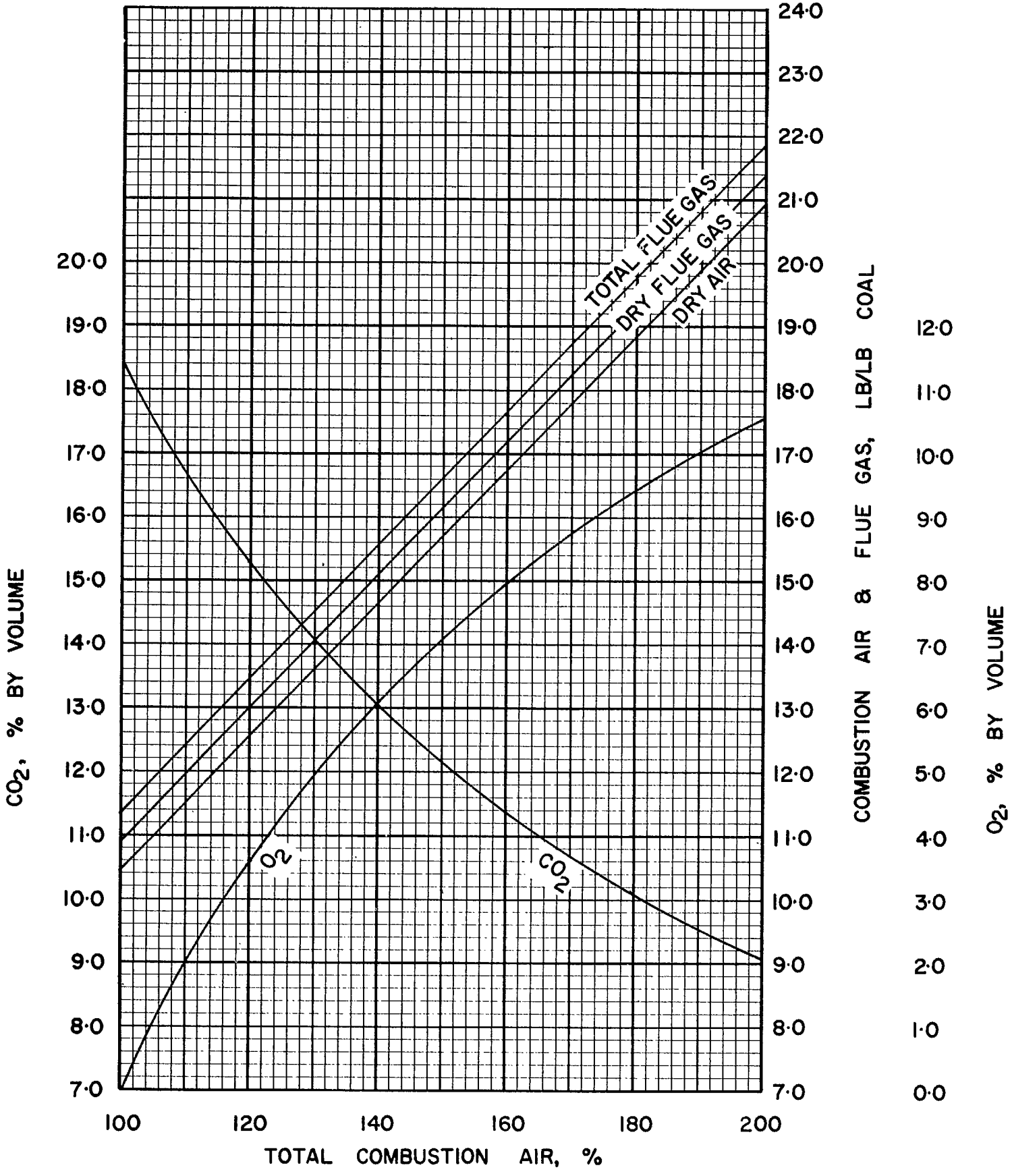

FIGURE 1· COMBUSTION DATA, WEIGHT BASIS

US·P·11

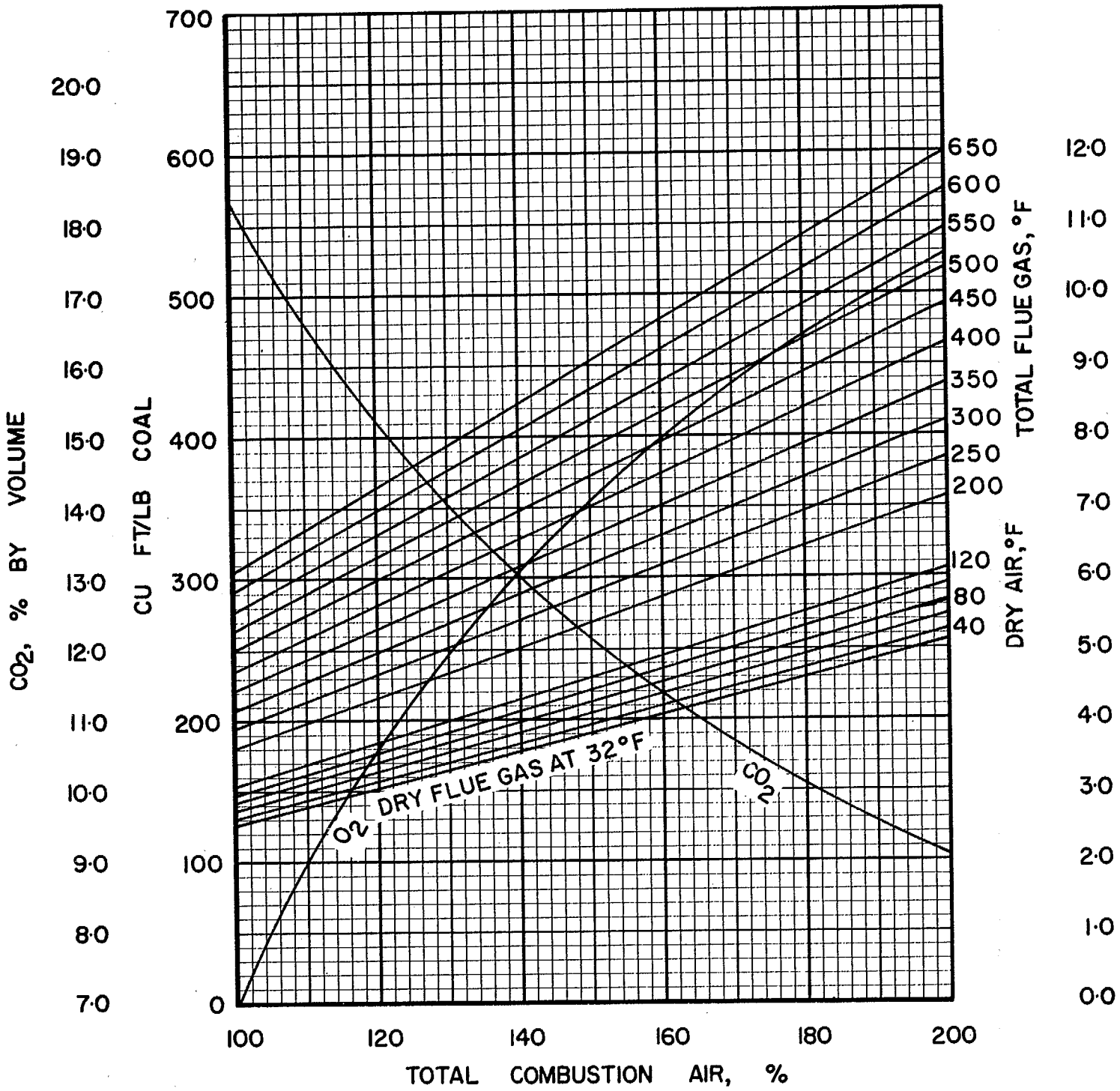

FIGURE 2· COMBUSTION DATA, VOLUME BASIS

US·P·11

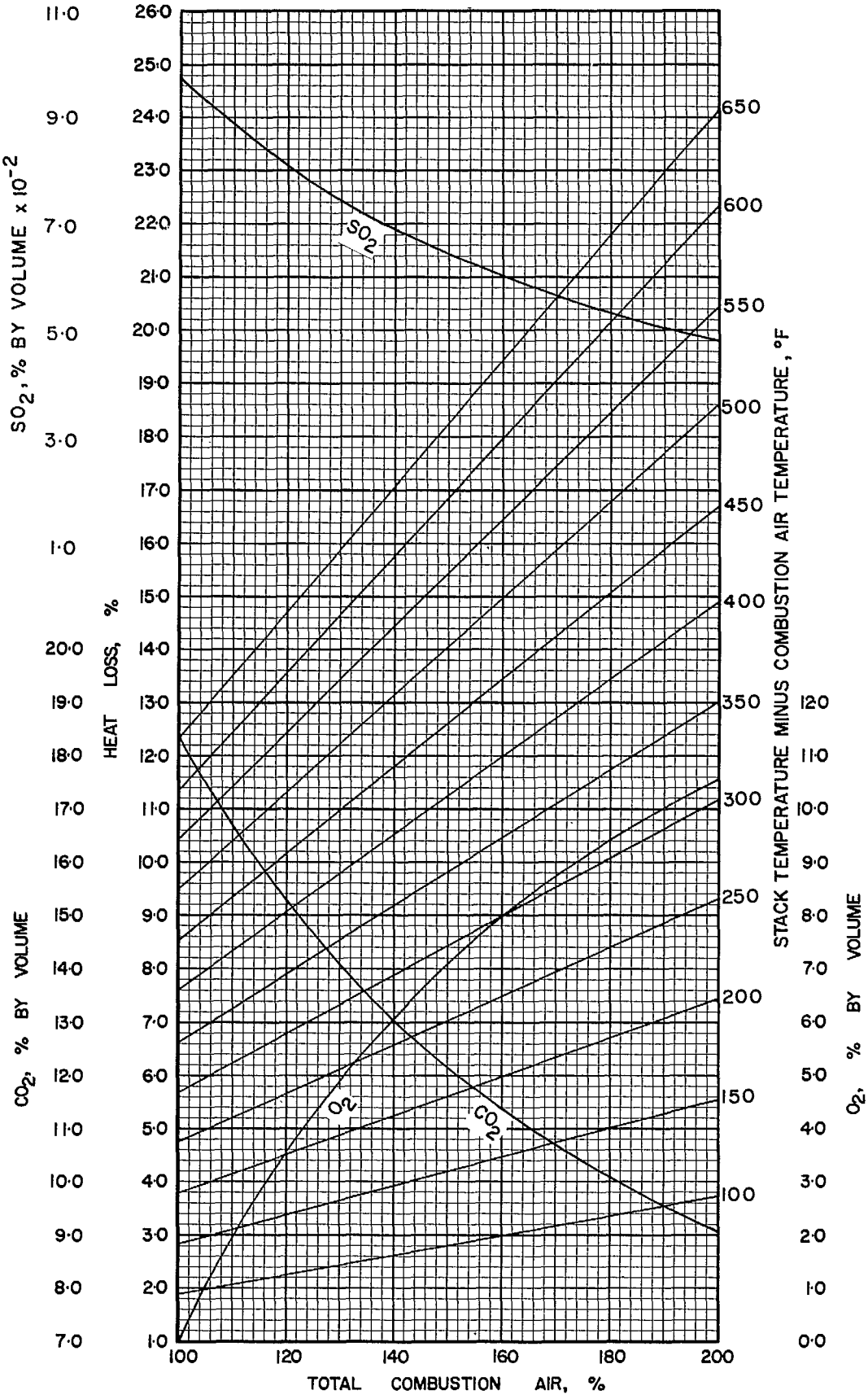

FIGURE 3· DRY FLUE GAS LOSS FOR A RANGE OF TEMPERATURE DIFFERENTIALS

US·P·11

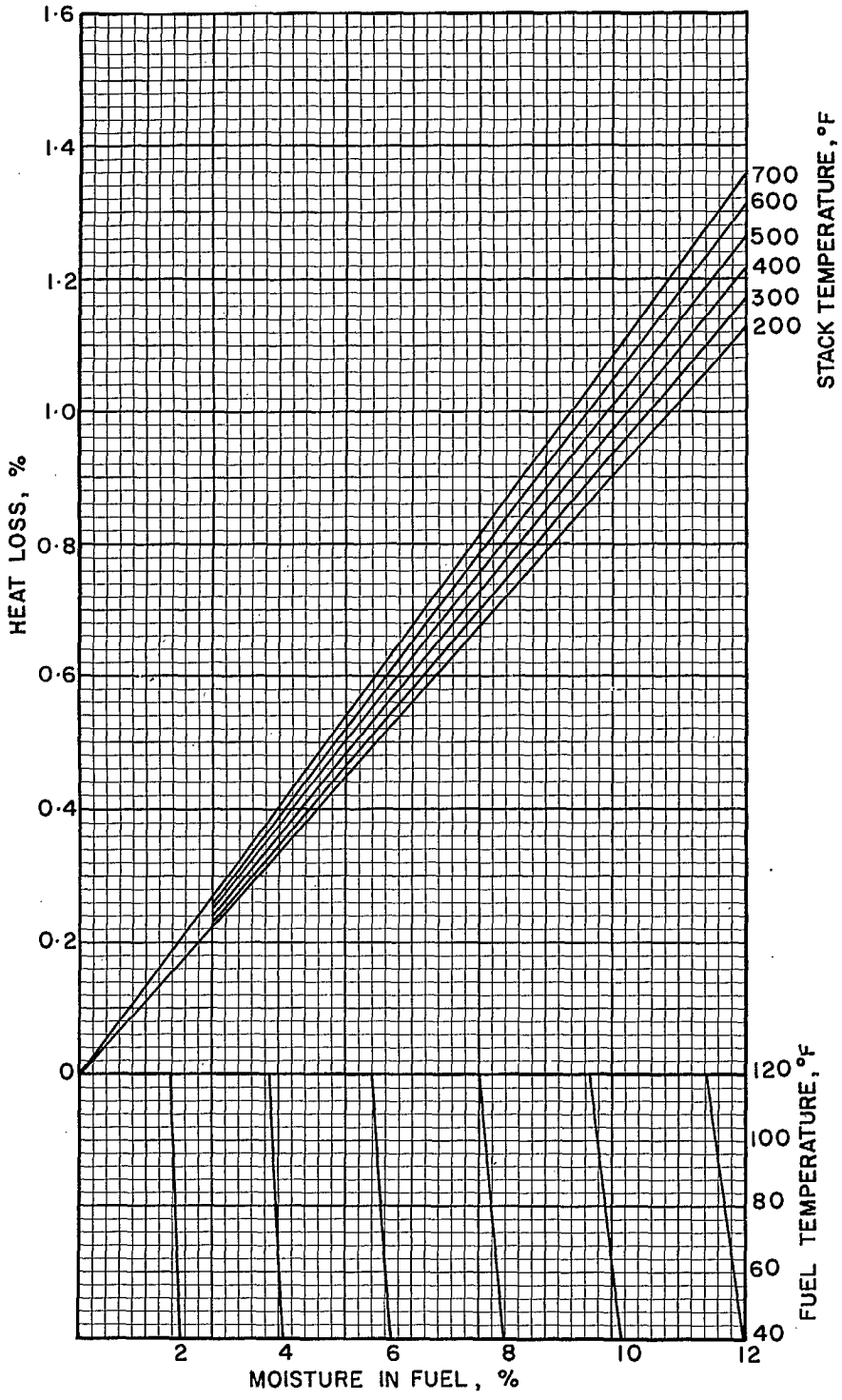

FIGURE 4· HEAT LOSS DUE TO MOISTURE IN COAL

US·P·11

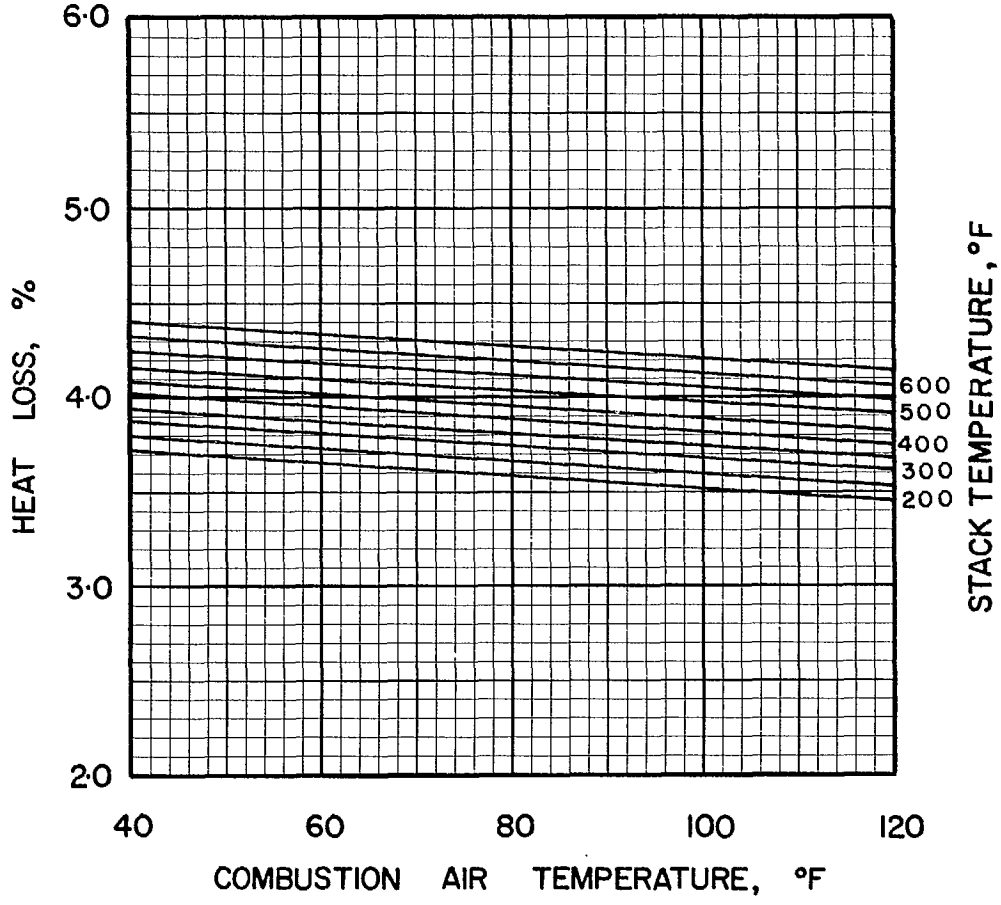

FIGURE 5· HYDROGEN LOSS FOR A RANGE OF STACK TEMPERATURES

US·P·11

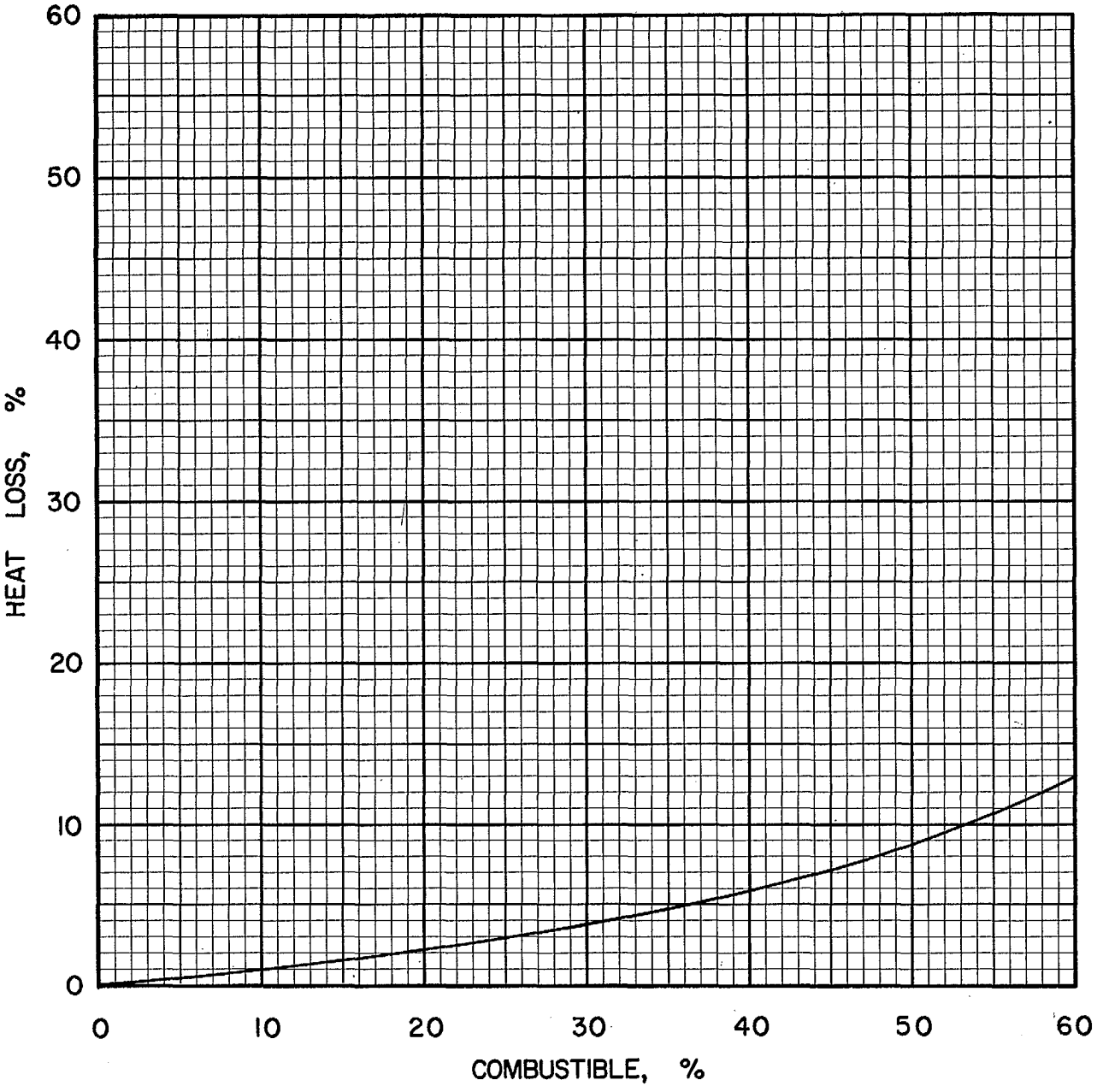

FIGURE 6 HEAT LOSS FOR A RANGE OF COMBUSTIBLE CONCENTRATIONS IN REFUSE

US·P·11

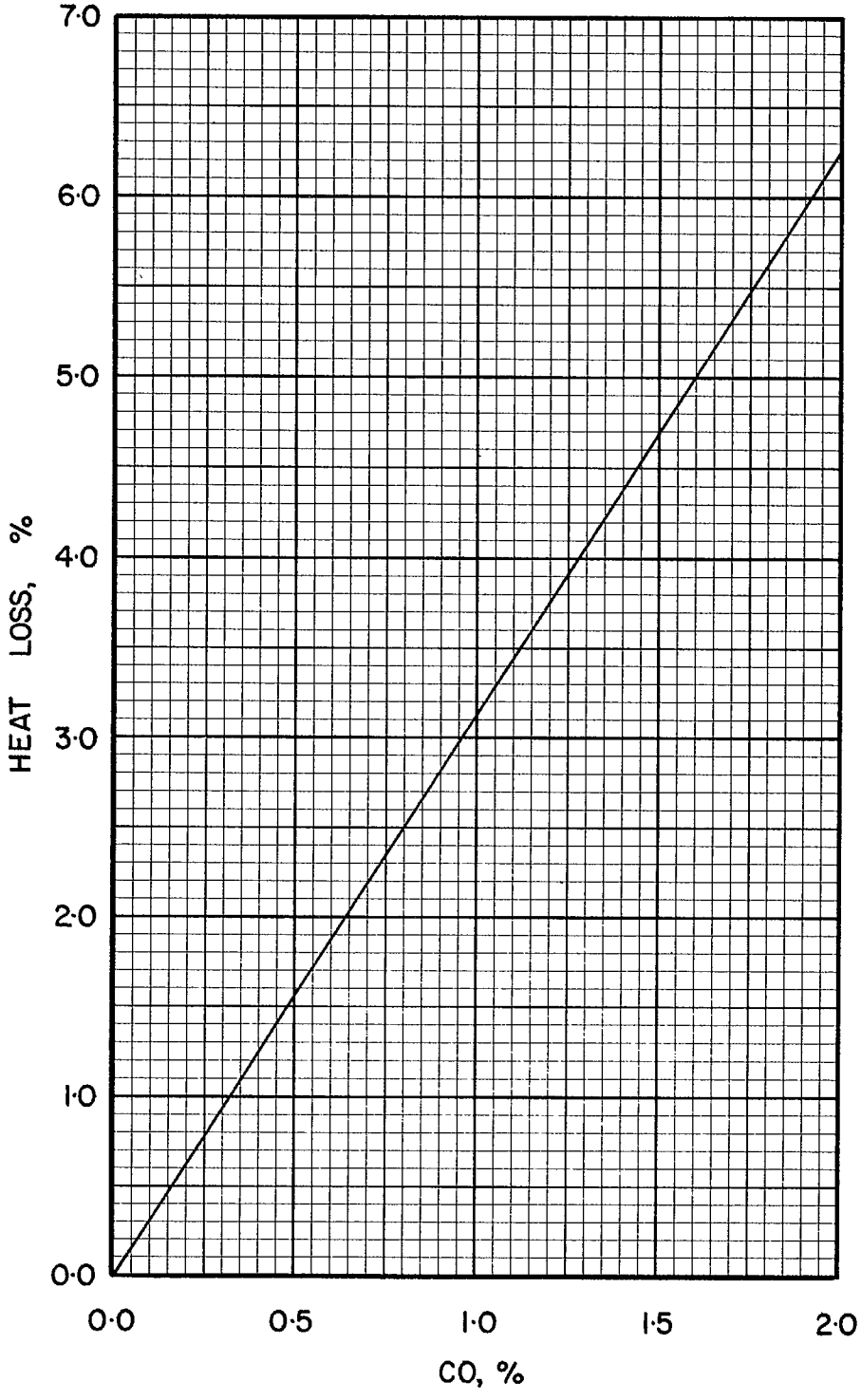

FIGURE 7 · HEAT LOSS FOR A RANGE OF CO CONCENTRATIONS, ASSUMING NEGLIGIBLE EXCESS AIR

US·P·11

COAL US P-12, RENTON, ALLEGHENY COUNTY

Typical Moisture Range: 4–12%

Proximate Analysis (lb/lb dry coal)

Ash	0.103
Volatile Matter	0.347
Fixed Carbon	0.550
Total	1.000

Ultimate Analysis (lb/lb dry coal)

Carbon (C)	0.754
Hydrogen (H)	0.052
Sulphur (S)	0.015
Nitrogen (N)	0.016
Oxygen (O)	0.060
Ash	0.103
Total	1.000

Gross Calorific Value

Btu/lb:	13694
Btu/short ton:	27.39×10^6
Btu/long ton:	30.67×10^6
MJ/kg:	31.84

Conversion Factors

1 short ton = 0.8929 long tons = 2000 lb
10^6 Btu = 73.02 lb
10^6 Btu = 0.03651 short tons
10^6 Btu = 0.03260 long tons

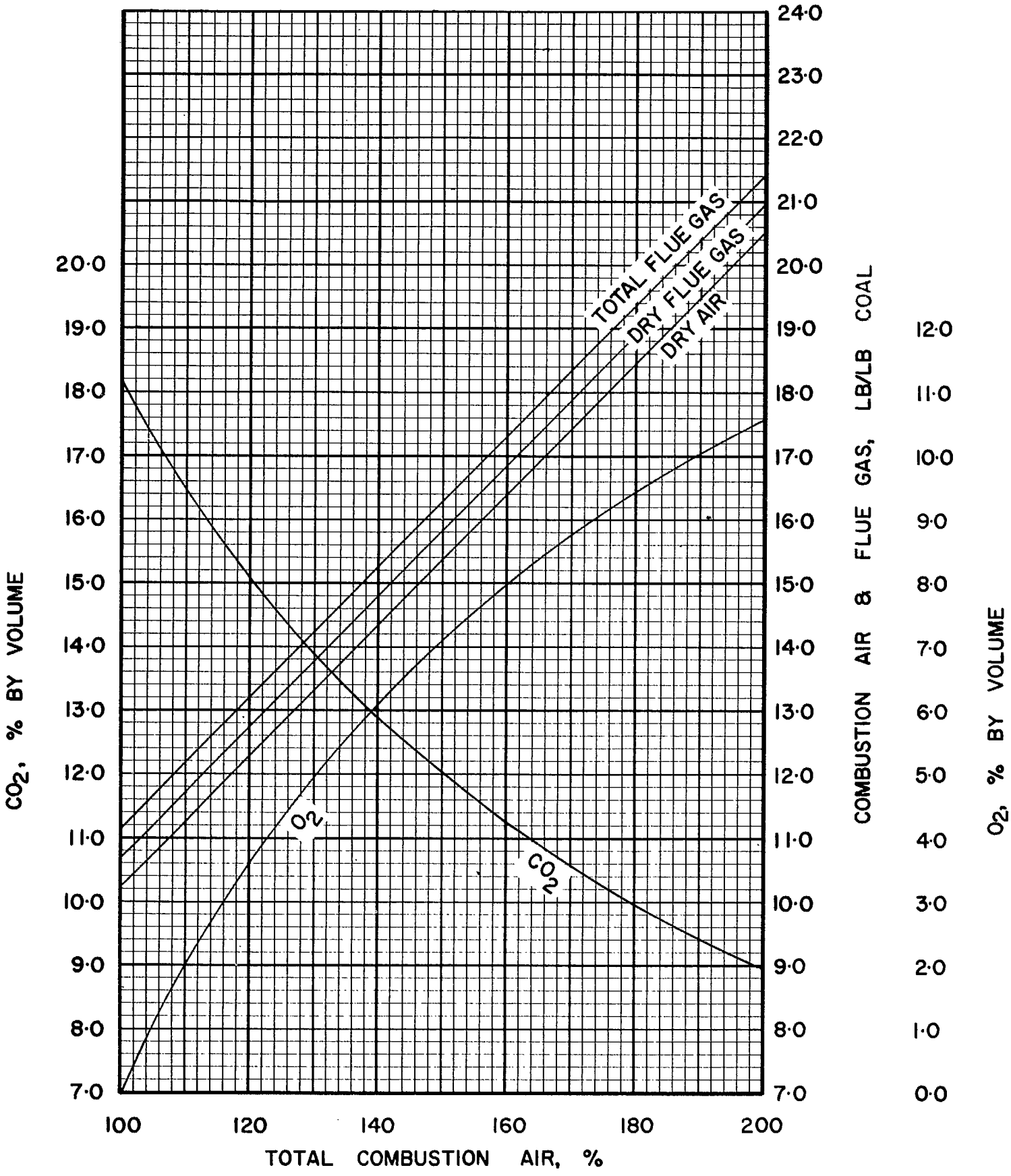

FIGURE 1· COMBUSTION DATA, WEIGHT BASIS

US·P·12

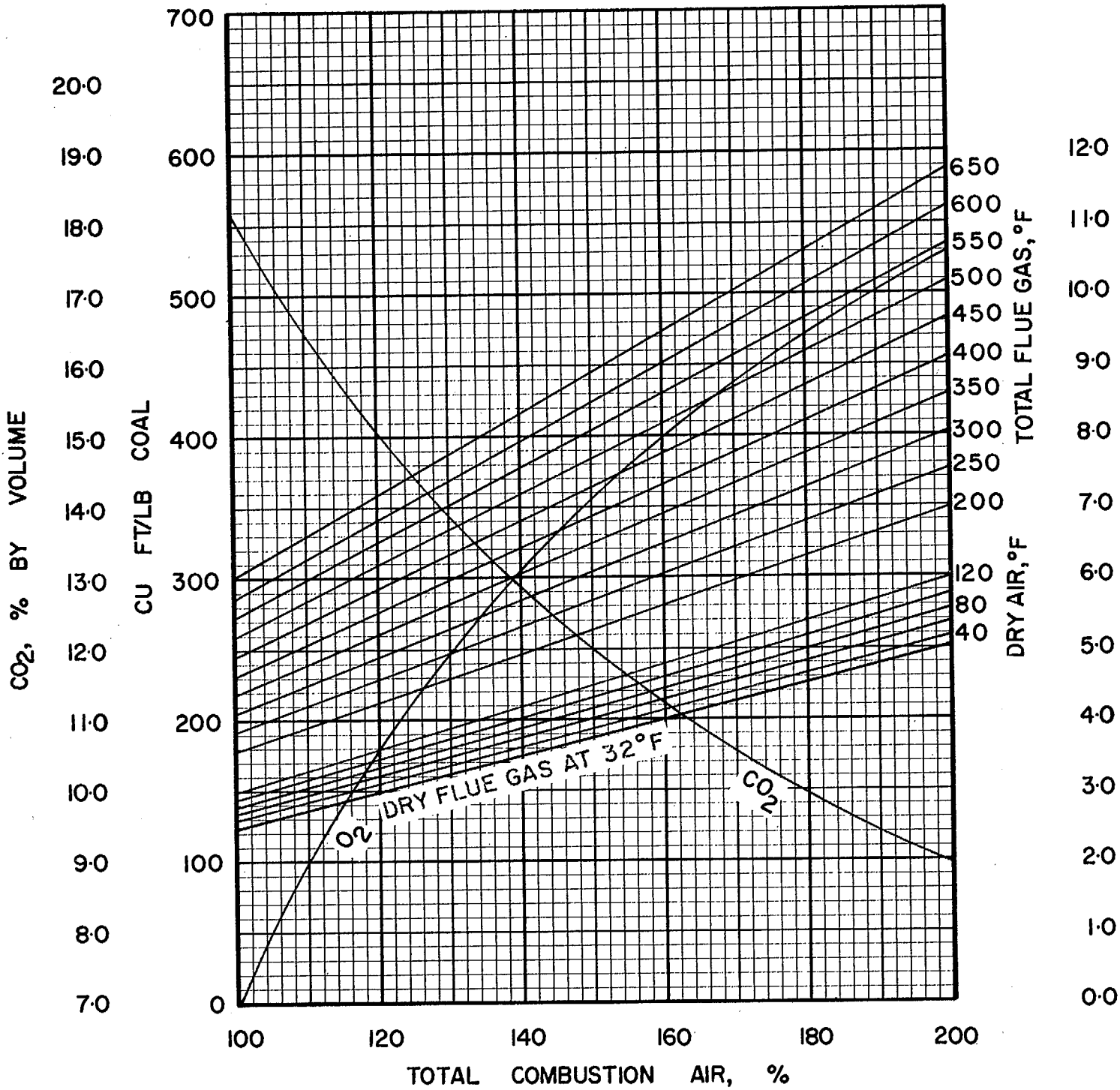

FIGURE 2· COMBUSTION DATA, VOLUME BASIS

US·P·12

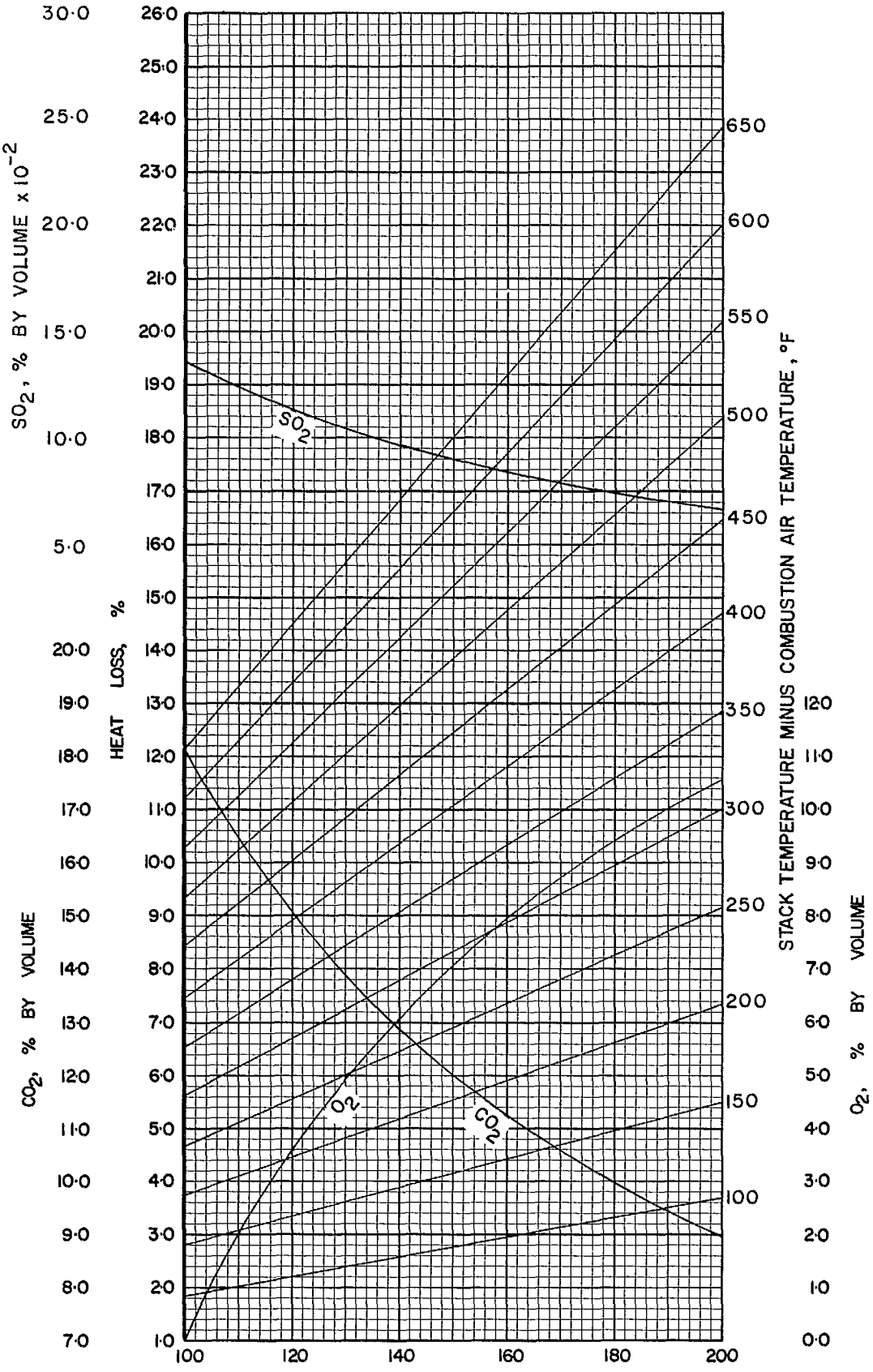

FIGURE 3· DRY FLUE GAS LOSS FOR A RANGE OF TEMPERATURE DIFFERENTIALS

US·P·12

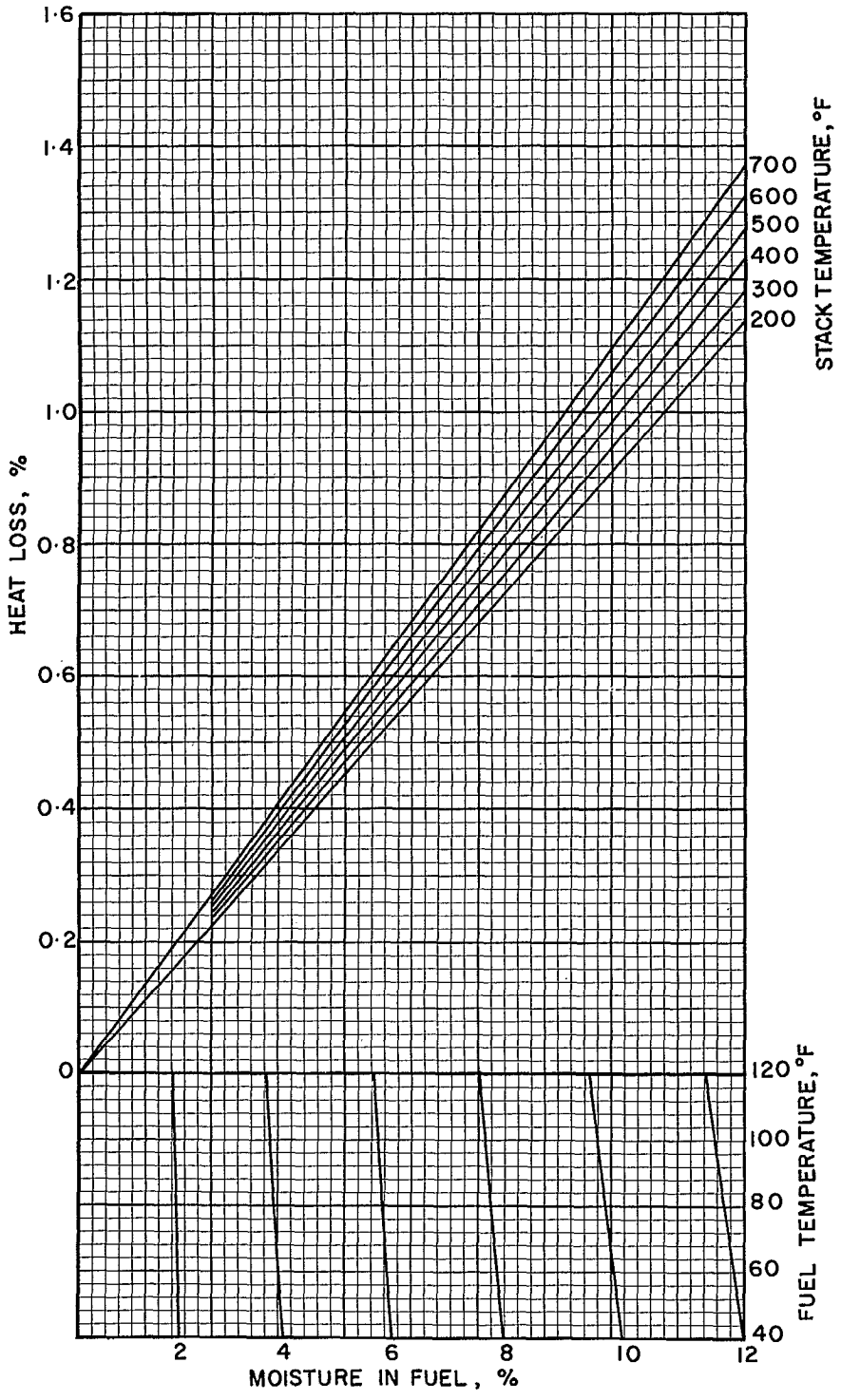

FIGURE 4· HEAT LOSS DUE TO MOISTURE IN COAL

US·P·12

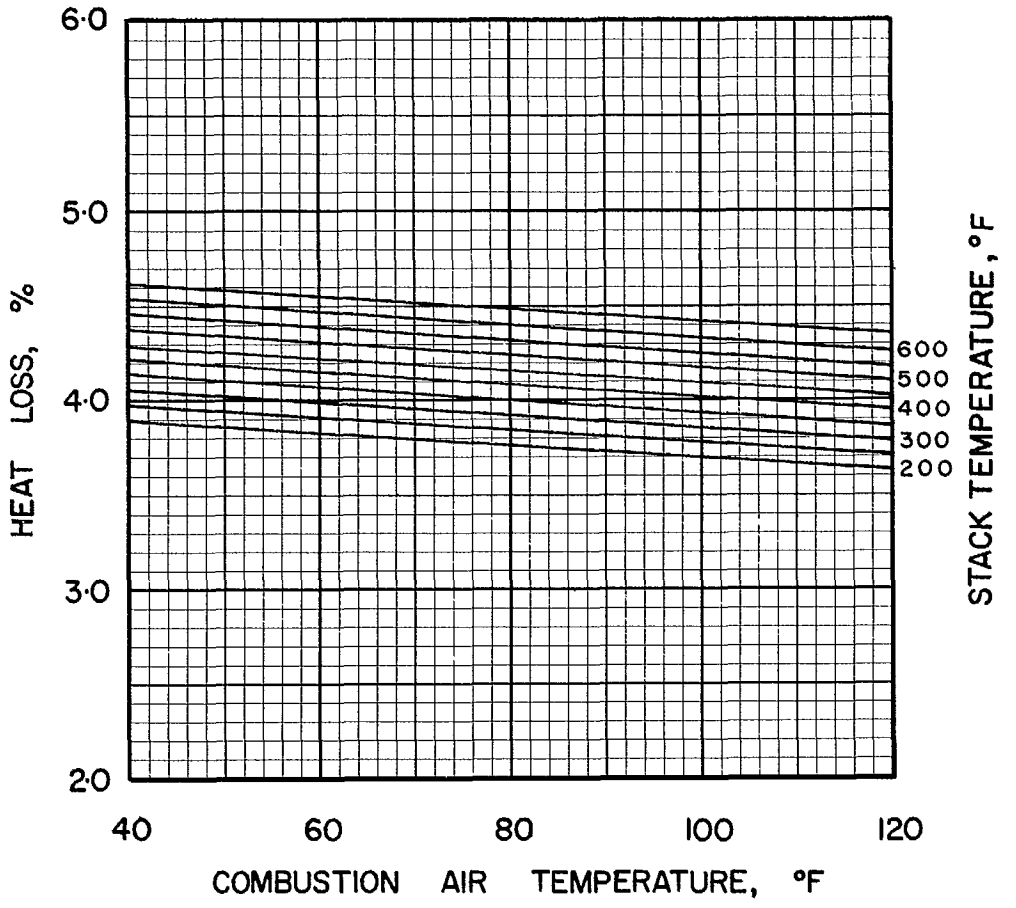

FIGURE 5 HYDROGEN LOSS FOR A RANGE OF STACK TEMPERATURES

US·P·12

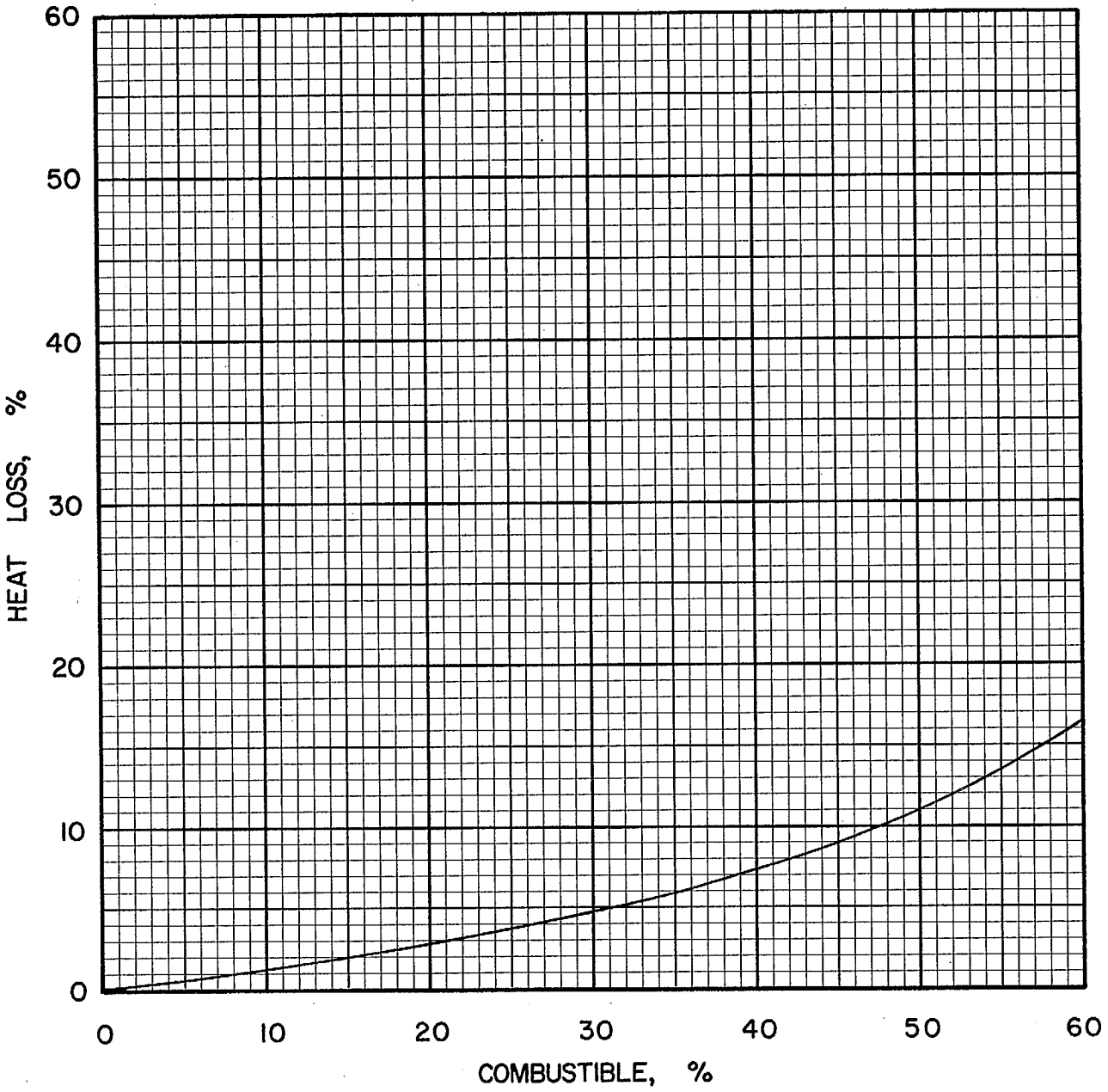

FIGURE 6 HEAT LOSS FOR A RANGE OF COMBUSTIBLE CONCENTRATIONS IN REFUSE

US·P·12

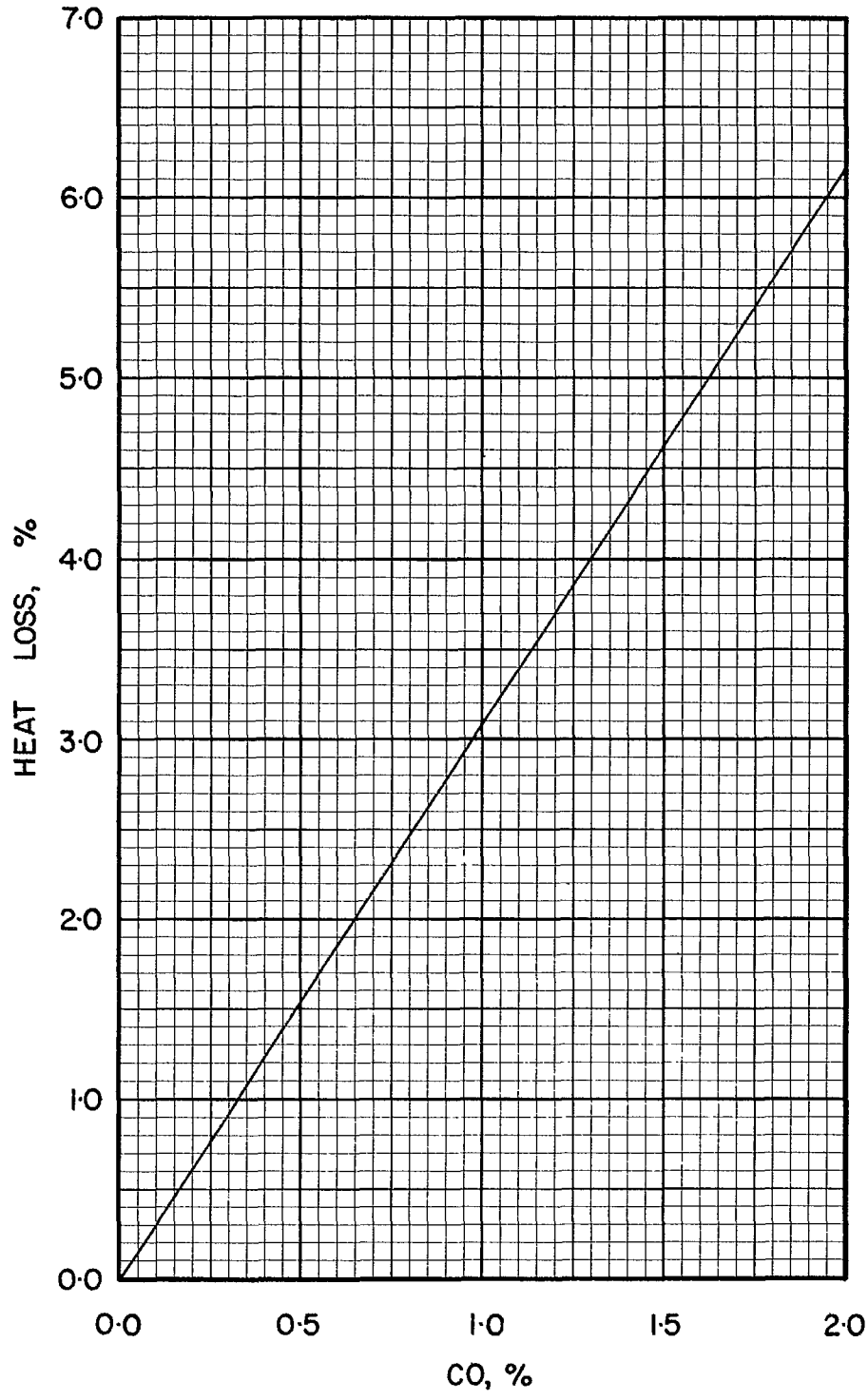

FIGURE 7 · HEAT LOSS FOR A RANGE OF CO CONCENTRATIONS, ASSUMING NEGLIGIBLE EXCESS AIR

US·P·12

COAL US V-1, LEVISA RIVER AND BLACK WATCH

Typical Moisture Range: 0–8%

Proximate Analysis (lb/lb dry coal)

Ash	0.089
Volatile Matter	0.315
Fixed Carbon	0.596
Total	1.000

Ultimate Analysis (lb/lb dry coal)

Carbon (C)	0.797
Hydrogen (H)	0.049
Sulphur (S)	0.007
Nitrogen (N)	0.016
Oxygen (O)	0.042
Ash	0.089
Total	1.000

Gross Calorific Value

Btu/lb:	13900
Btu/short ton:	27.80×10^6
Btu/long ton:	31.14×10^6
MJ/kg:	32.32

Conversion Factors

1 short ton = 0.8929 long tons = 2000 lb
10^6 Btu = 71.94 lb
10^6 Btu = 0.03597 short tons
10^6 Btu = 0.03212 long tons

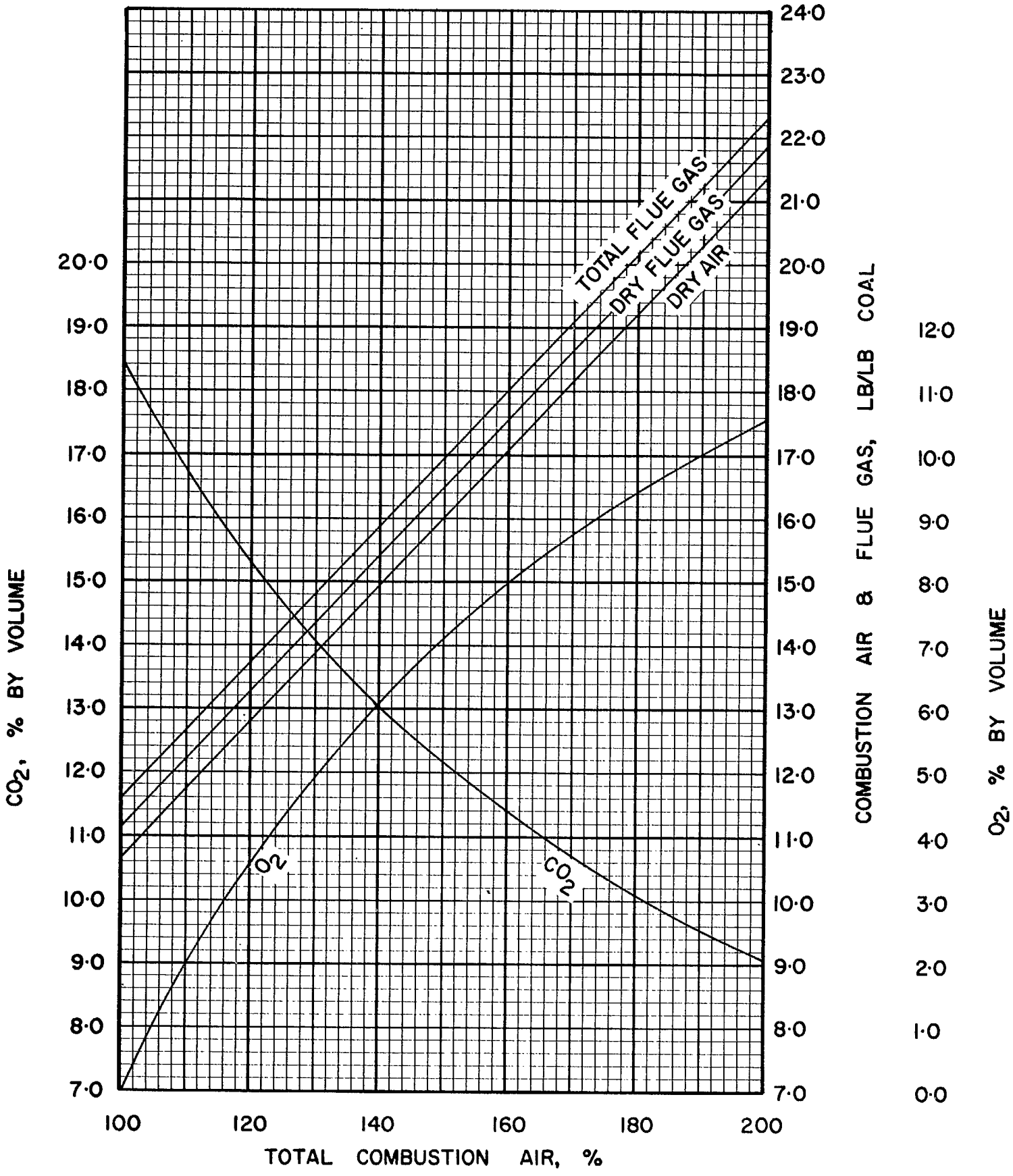

FIGURE 1· COMBUSTION DATA, WEIGHT BASIS

US·V·1

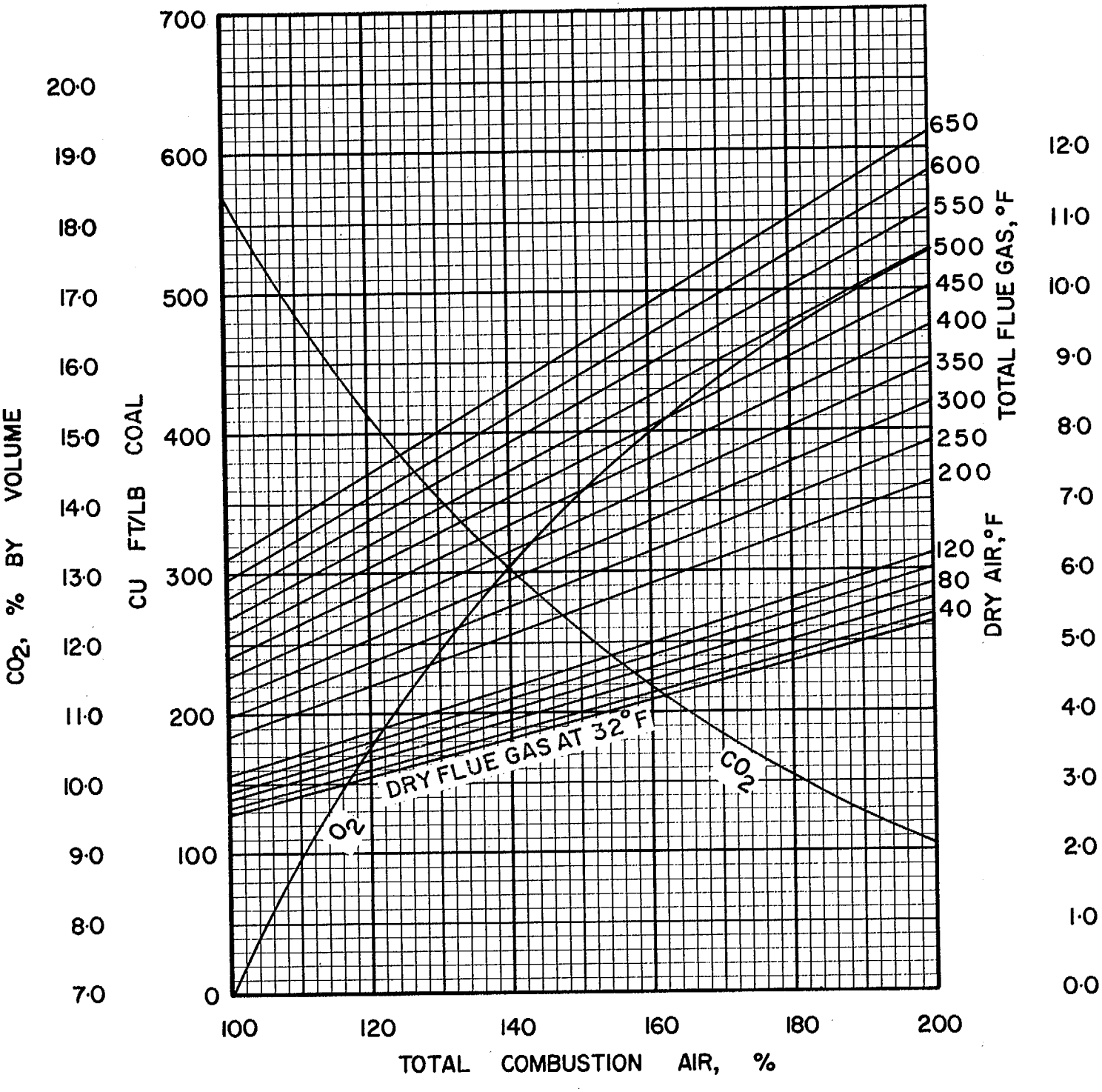

FIGURE 2· COMBUSTION DATA, VOLUME BASIS

US·V·1

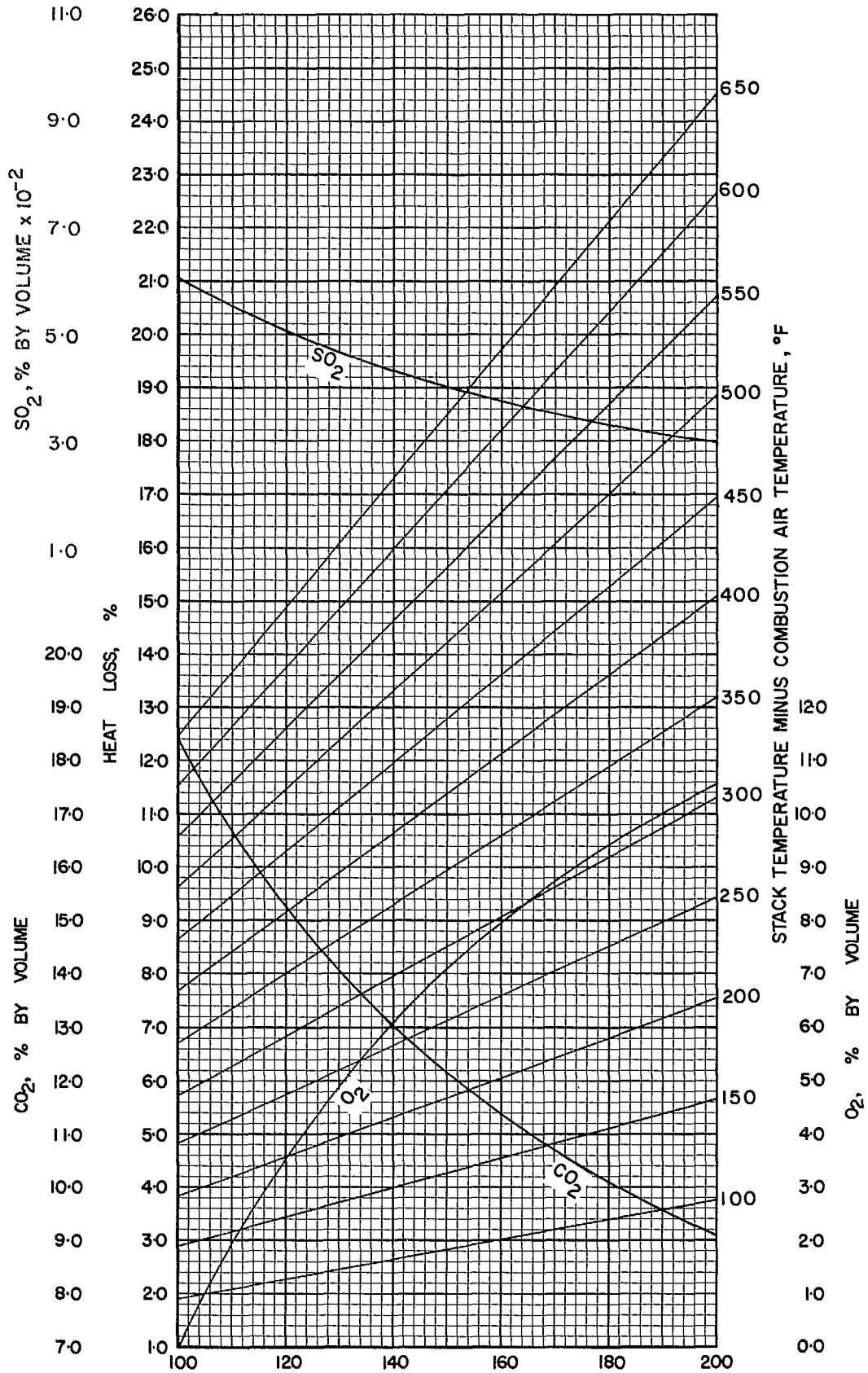

FIGURE 3· DRY FLUE GAS LOSS FOR A RANGE OF TEMPERATURE DIFFERENTIALS

US·V·1

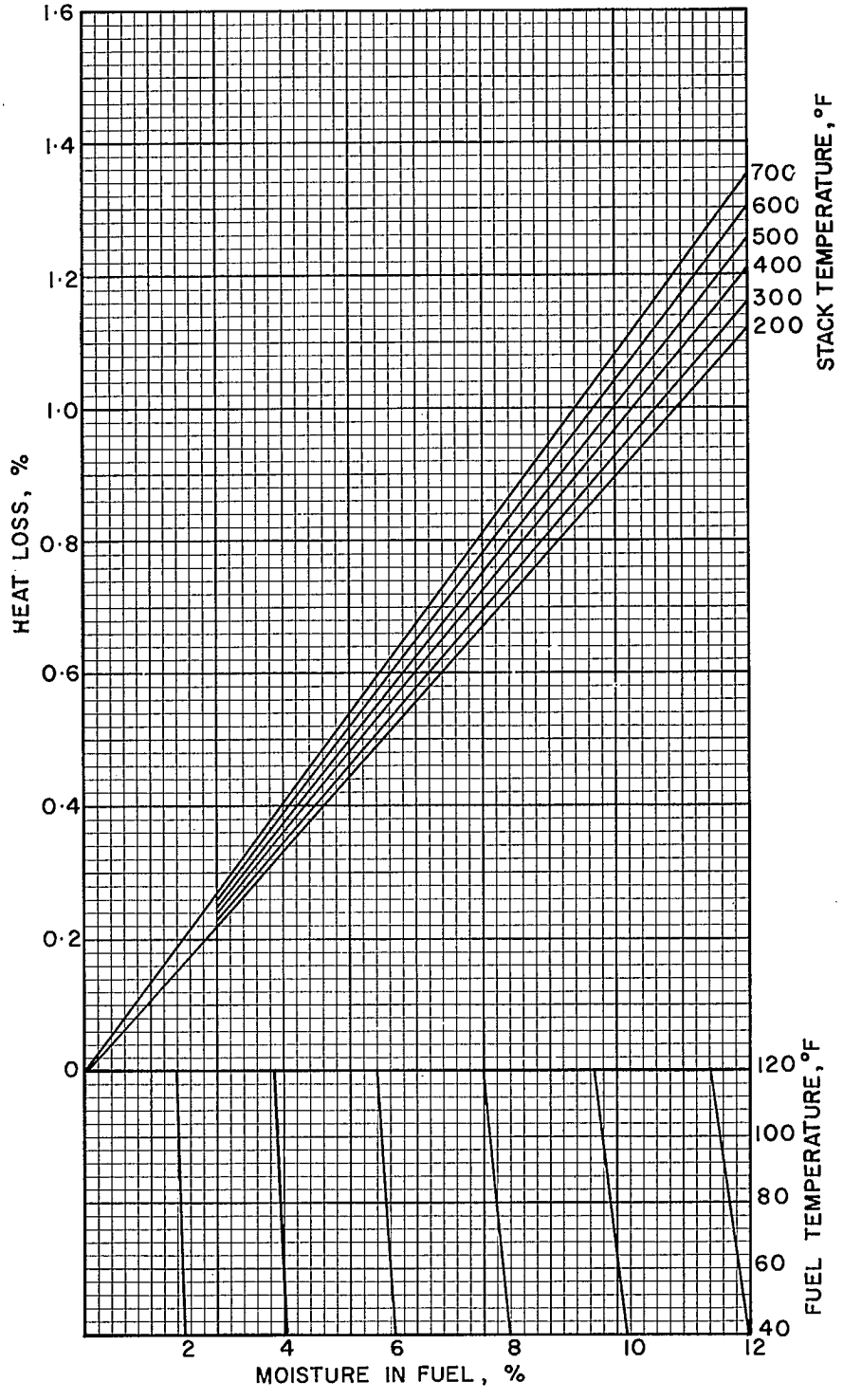

FIGURE 4· HEAT LOSS DUE TO MOISTURE IN COAL

US·V·1

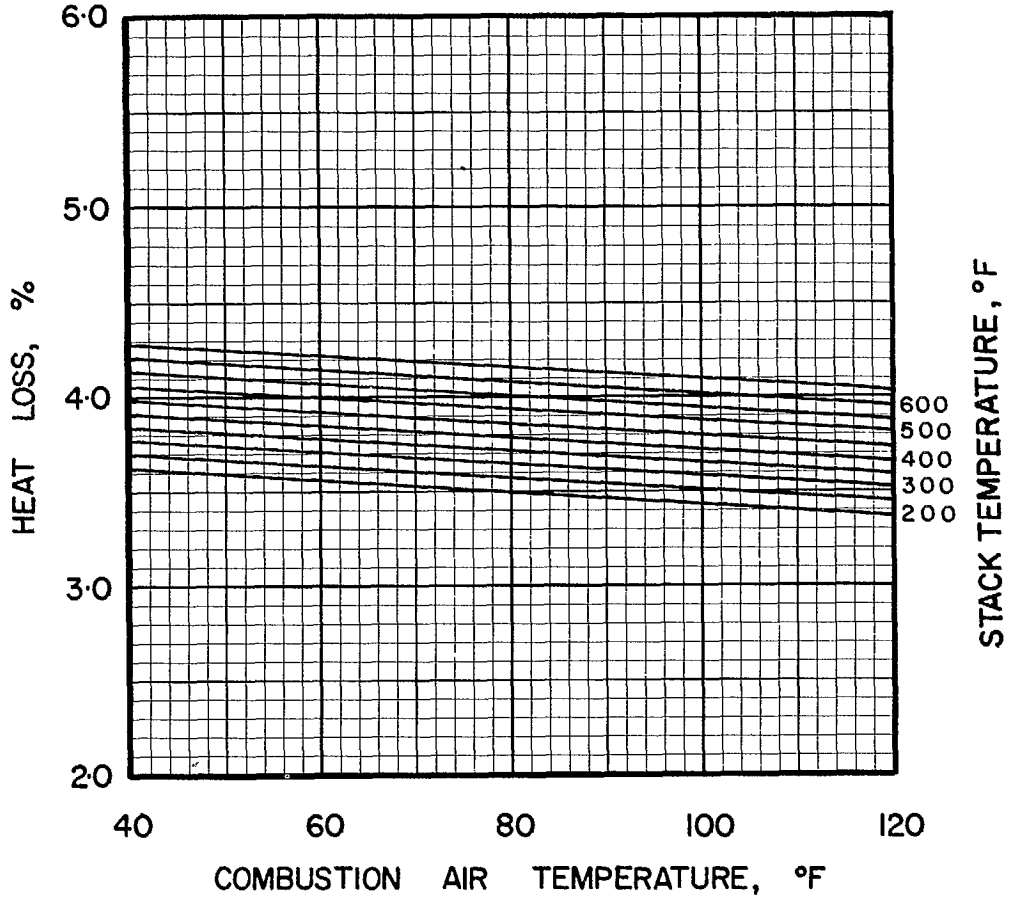

FIGURE 5· HYDROGEN LOSS FOR A RANGE OF STACK TEMPERATURES

US·V·1

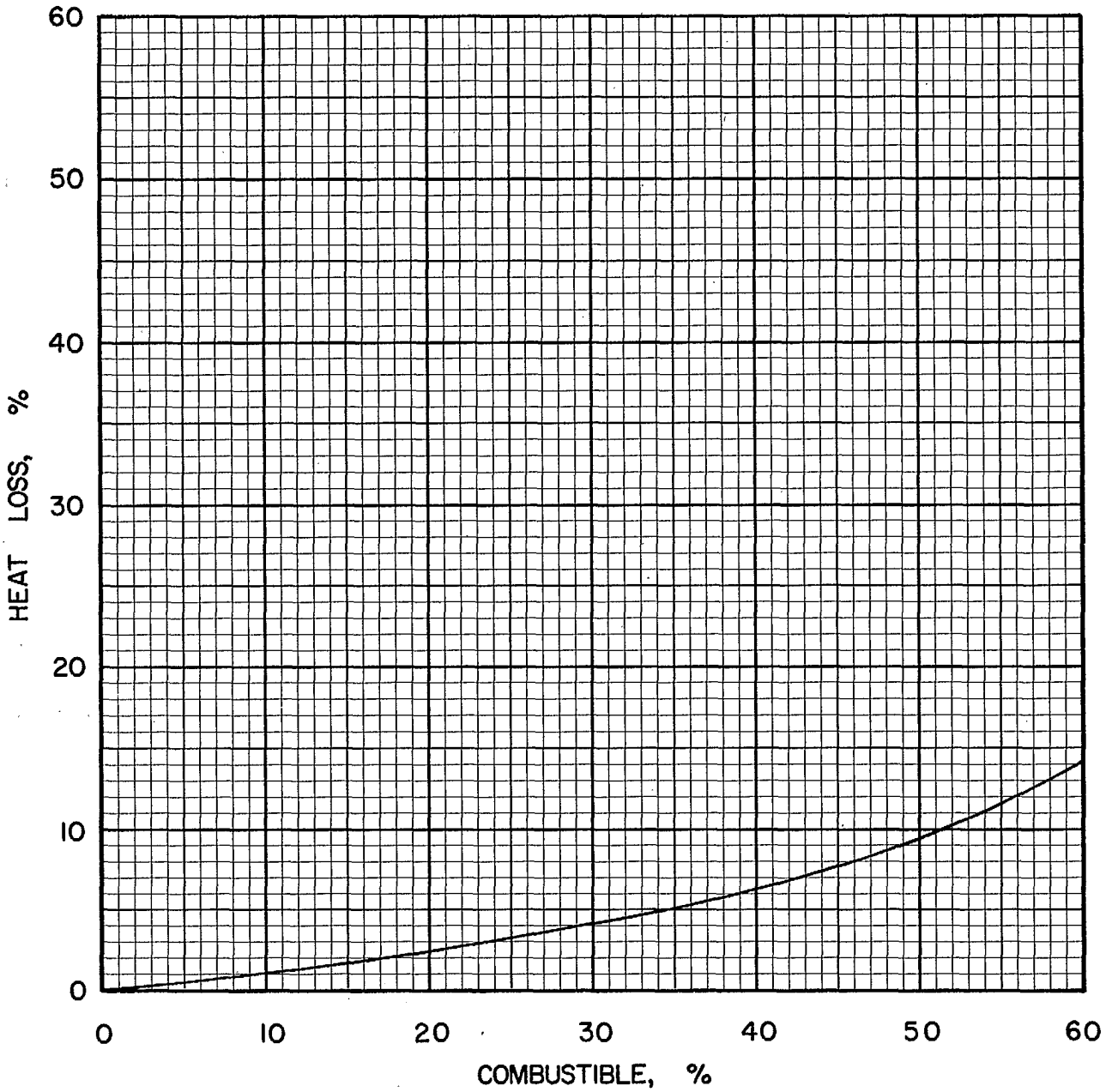

FIGURE 6 HEAT LOSS FOR A RANGE OF COMBUSTIBLE CONCENTRATIONS IN REFUSE

US·V·1

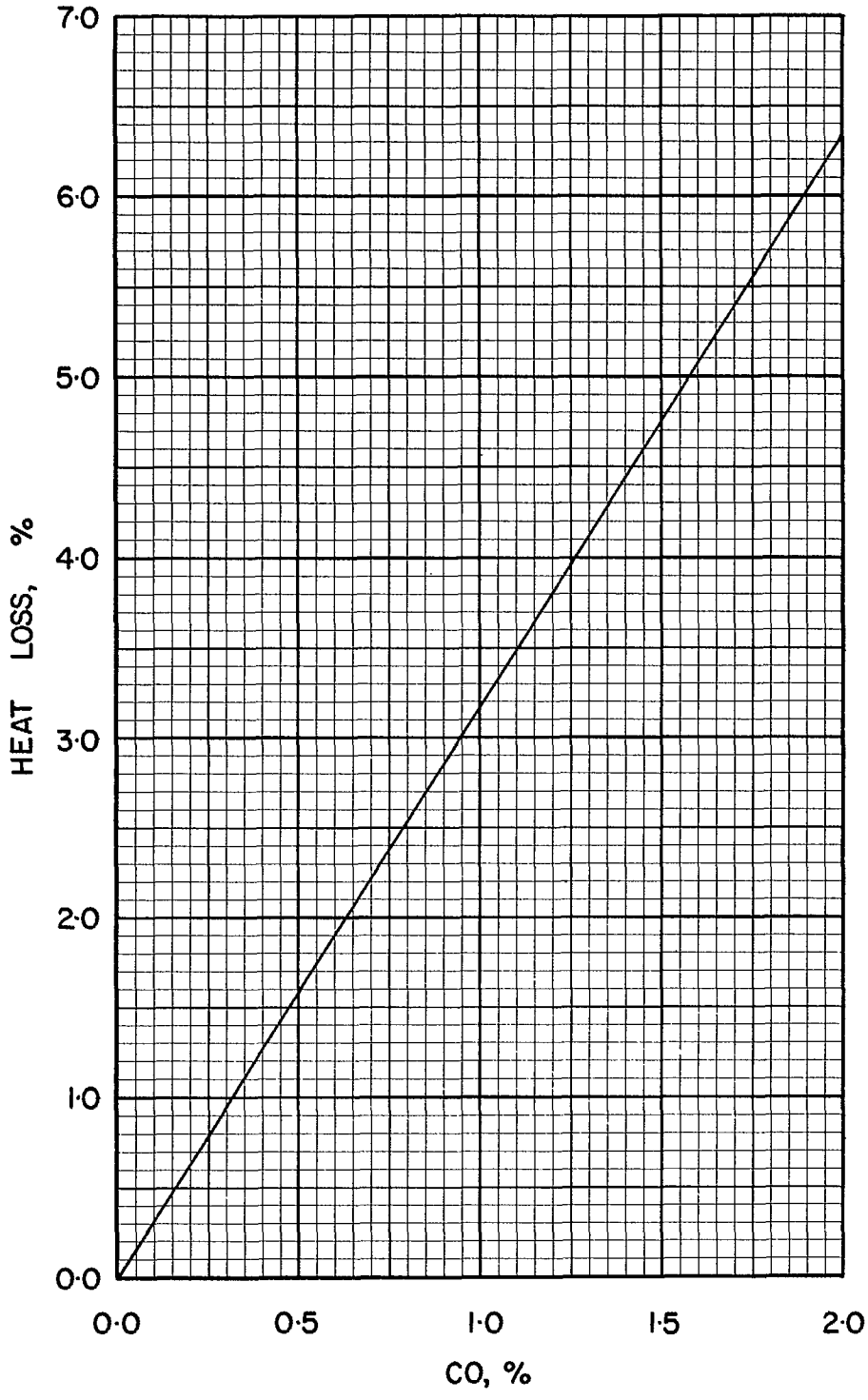

FIGURE 7 · HEAT LOSS FOR A RANGE OF CO CONCENTRATIONS, ASSUMING NEGLIGIBLE EXCESS AIR

US·V·1

COAL US V-2, VALLEY CAMP No. 8, COMMANDER

Typical Moisture Range: 0–8%

Proximate Analysis (lb/lb dry coal)

Ash	0.0700
Volatile Matter	0.3650
Fixed Carbon	0.5650
Total	1.0000

Ultimate Analysis (lb/lb dry coal)

Carbon (C)	0.787
Hydrogen (H)	0.053
Sulphur (S)	0.008
Nitrogen (N)	0.015
Oxygen (O)	0.067
Ash	0.070
Total	1.000

Calorific Value

Btu/lb:	14197
Btu/short ton:	28.39×10^6
Btu/long ton:	31.80×10^6
MJ/kg:	33.01

Conversion Factors

1 short ton = 0.8929 long tons = 2000 lb
10^6 Btu = 70.44 lb
10^6 Btu = 0.03522 short tons
10^6 Btu = 0.03146 long tons

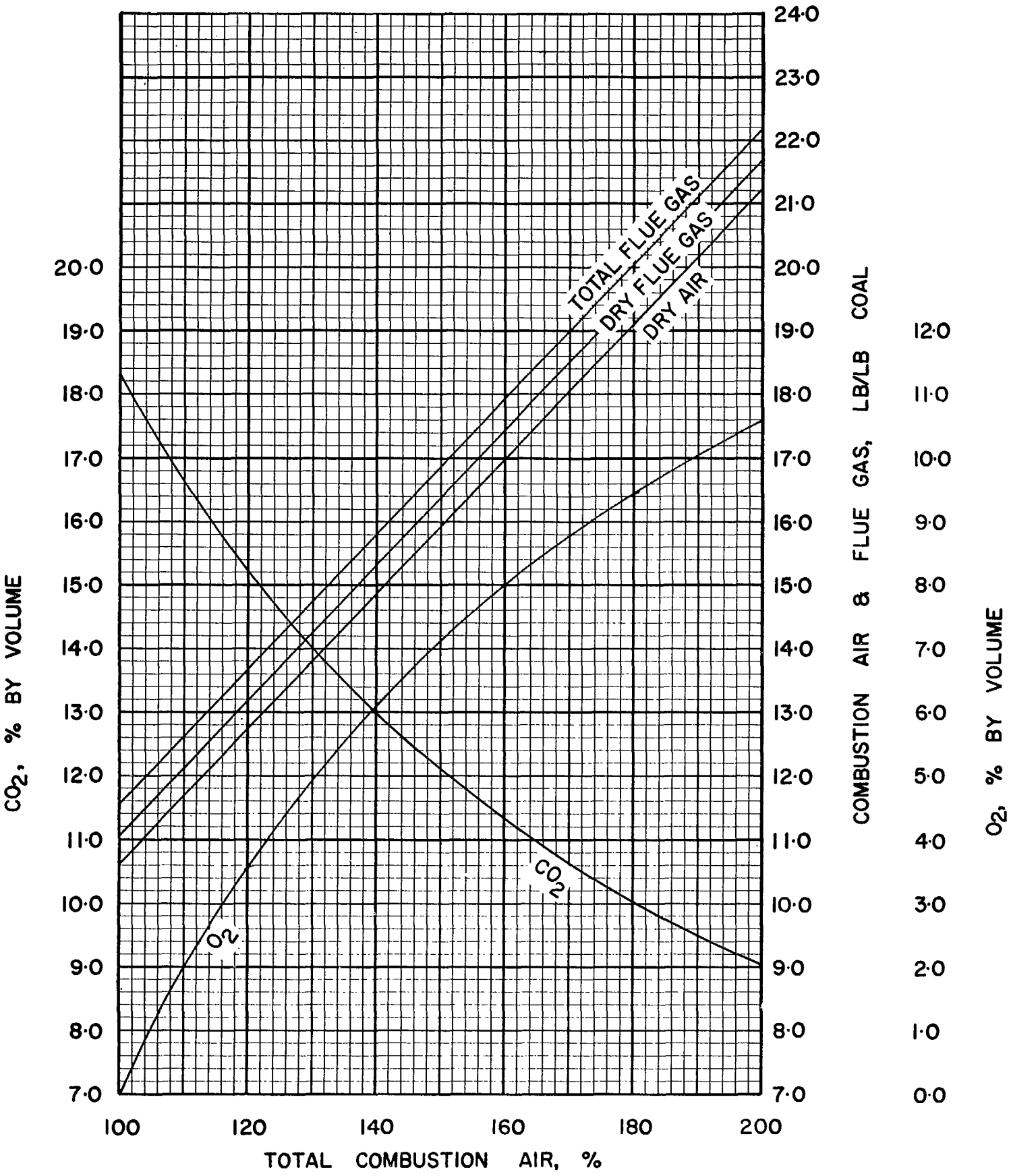

FIGURE 1· COMBUSTION DATA, WEIGHT BASIS

US·V·2

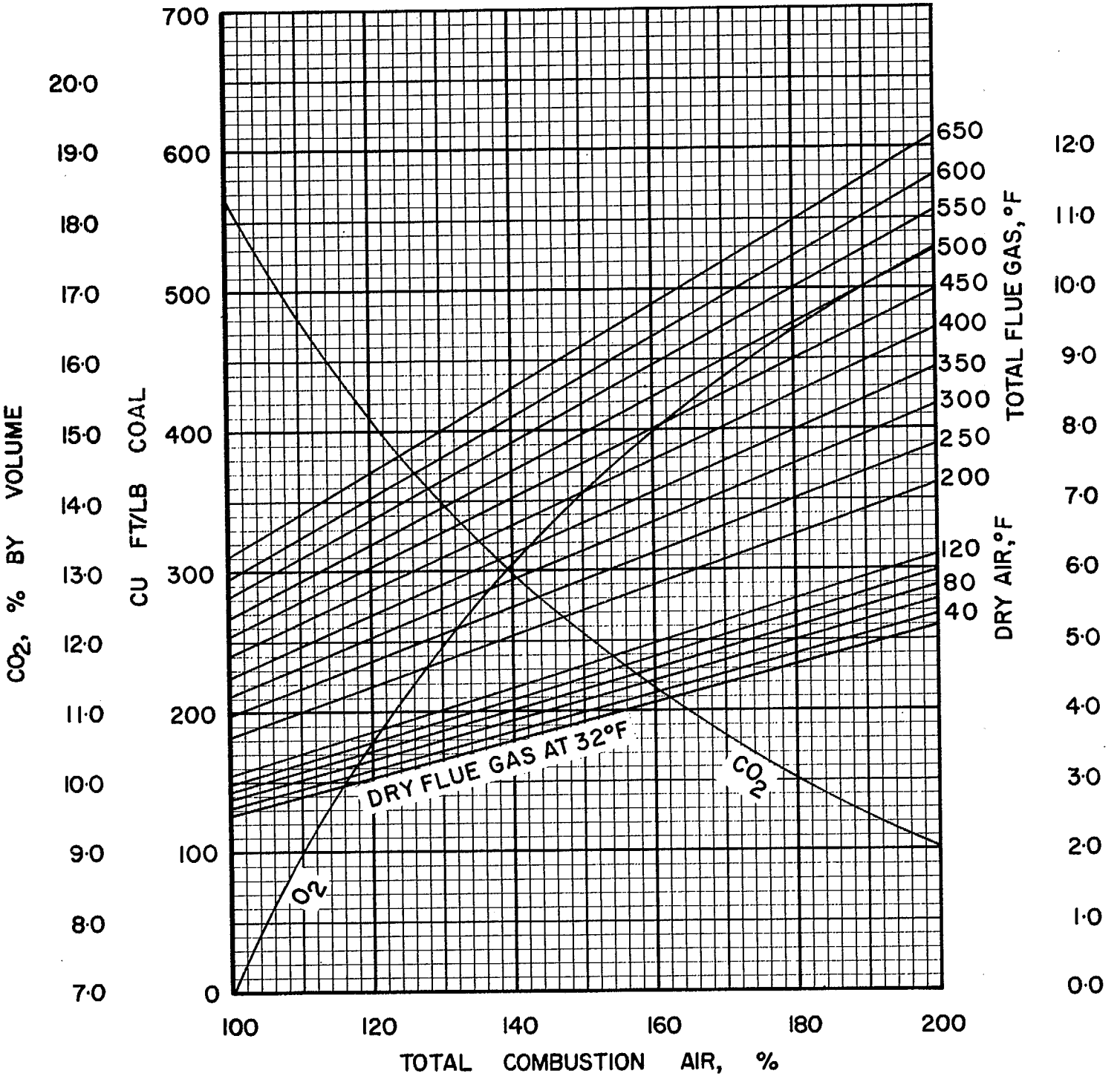

FIGURE 2· COMBUSTION DATA, VOLUME BASIS

US·V·2

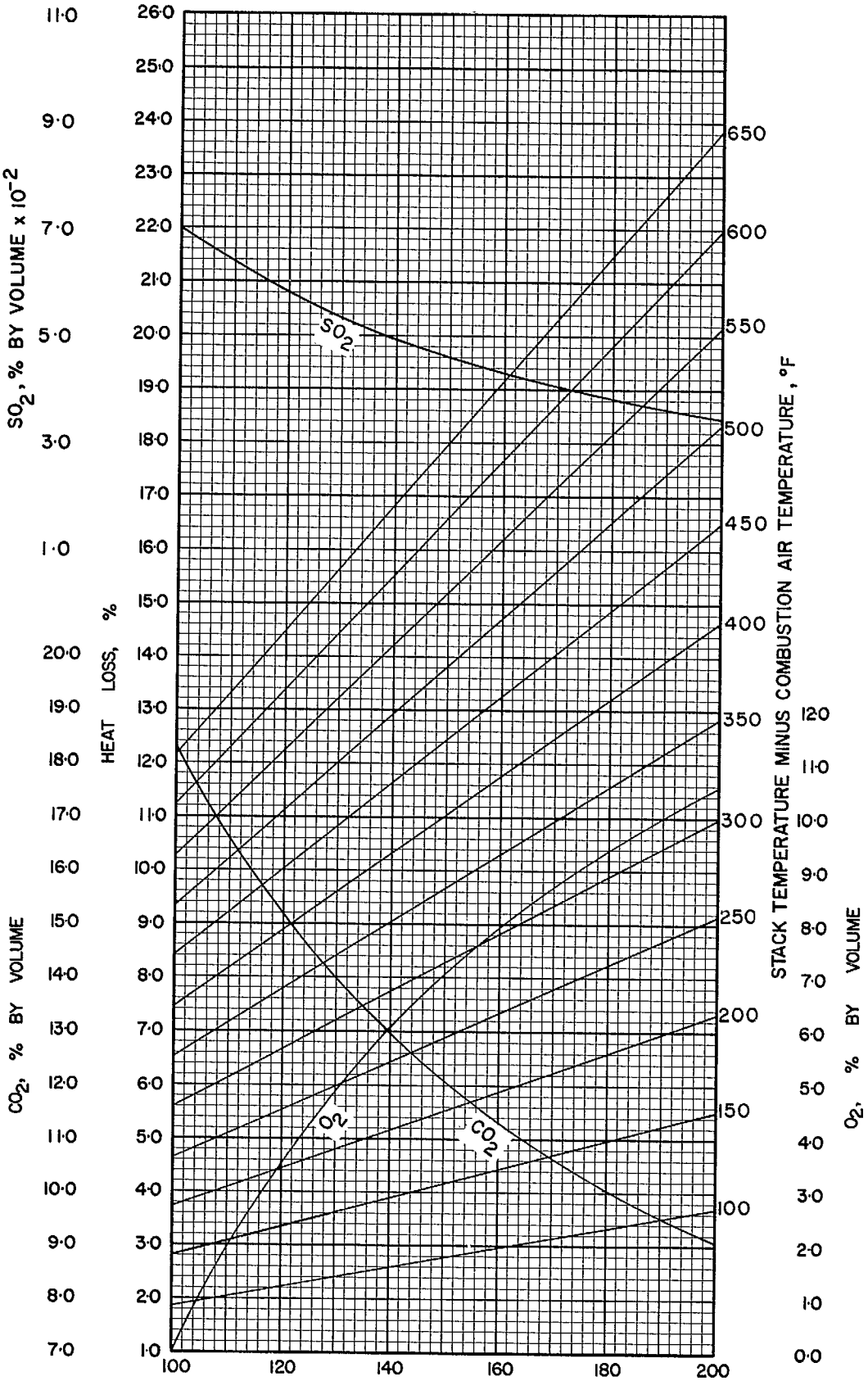

FIGURE 3· DRY FLUE GAS LOSS FOR A RANGE OF TEMPERATURE DIFFERENTIALS

US·V·2

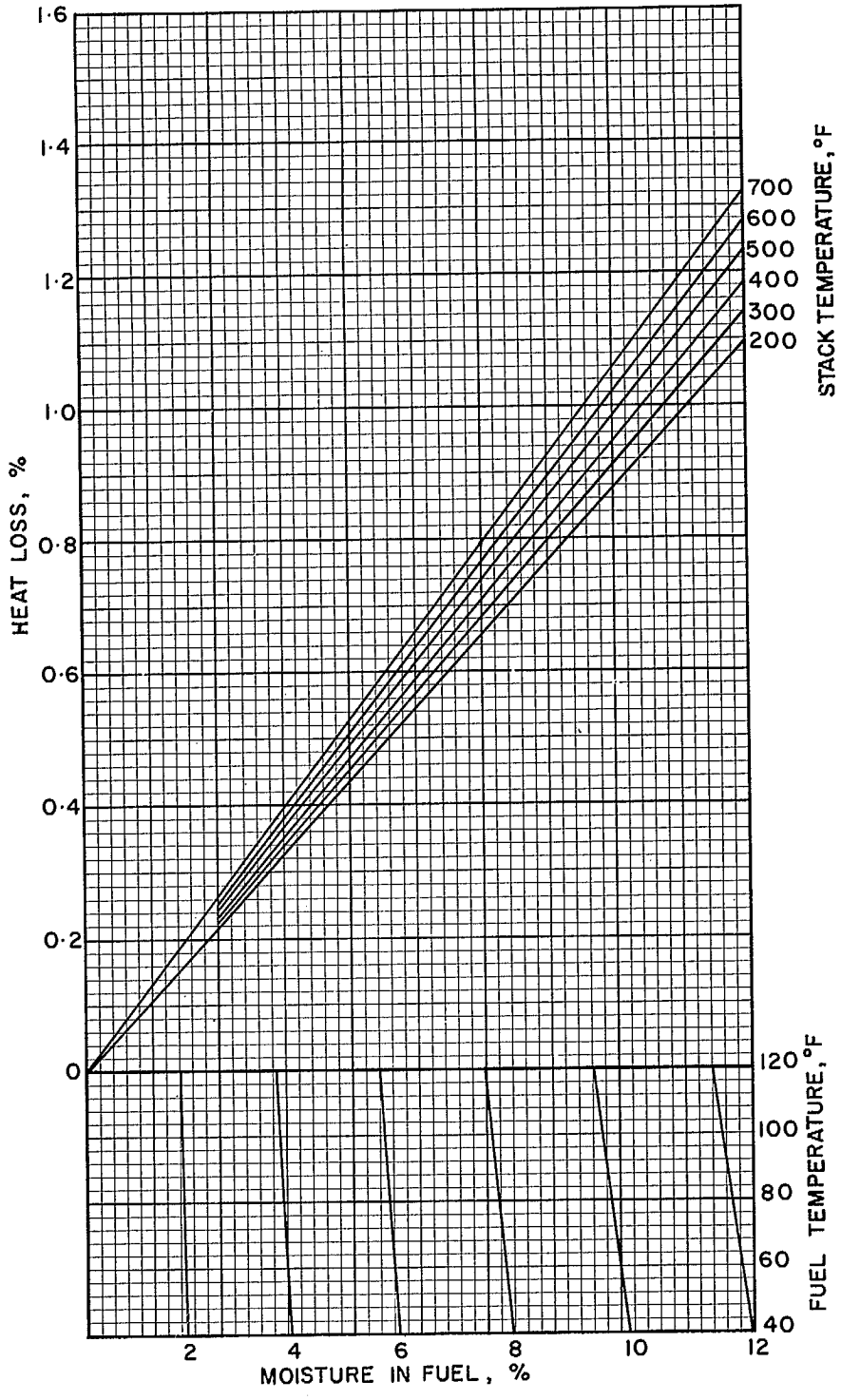

FIGURE 4 · HEAT LOSS DUE TO MOISTURE IN COAL

US·V·2

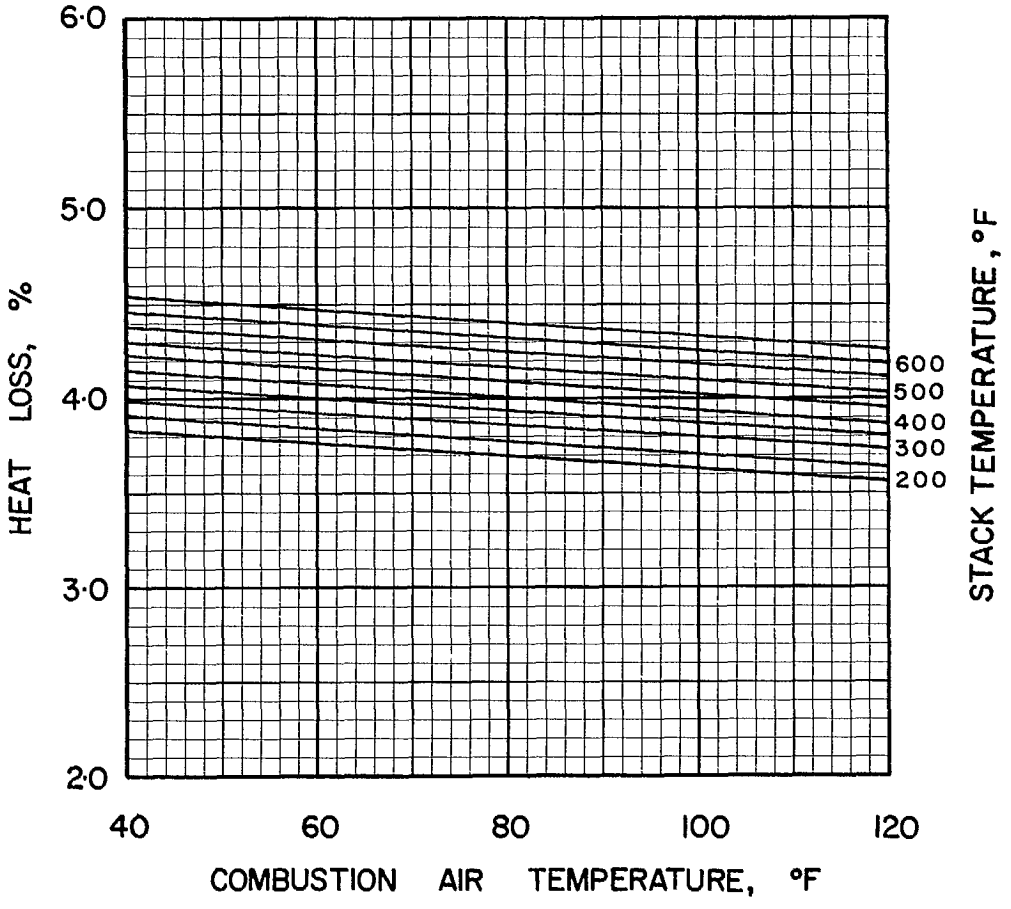

FIGURE 5· HYDROGEN LOSS FOR A RANGE OF STACK TEMPERATURES

US·V·2

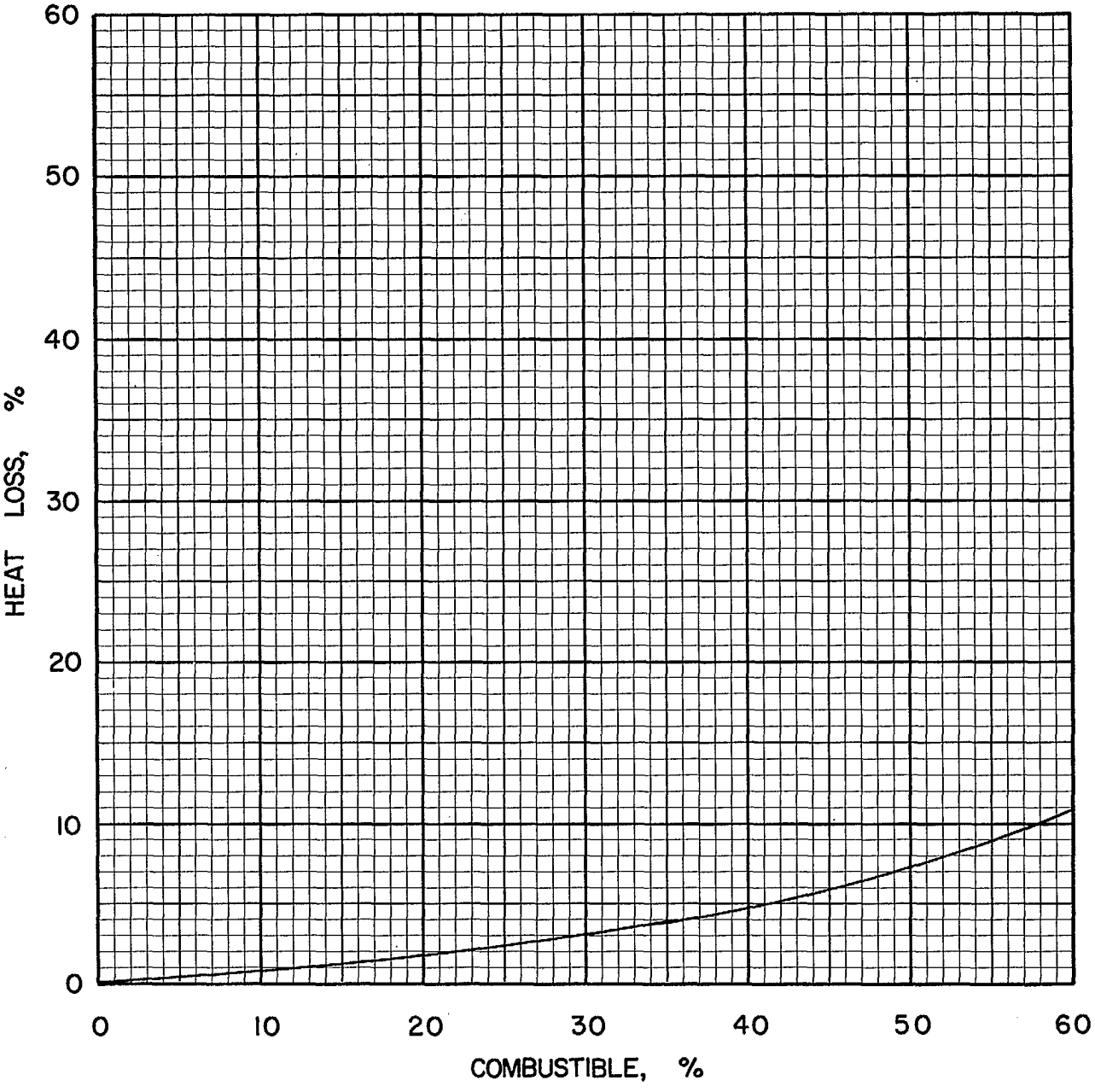

FIGURE 6 HEAT LOSS FOR A RANGE OF COMBUSTIBLE CONCENTRATIONS IN REFUSE

US·V·2

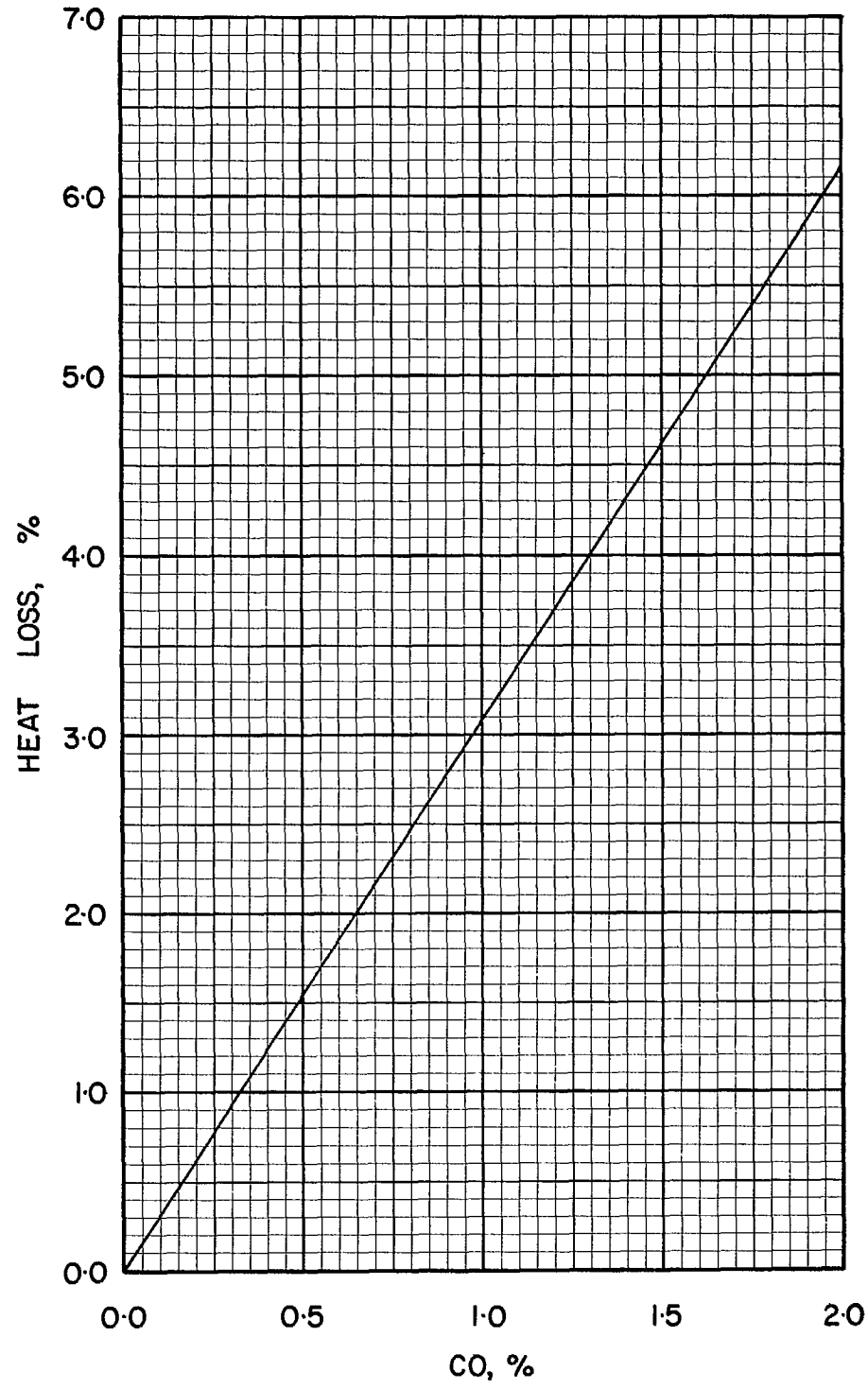

FIGURE 7 · HEAT LOSS FOR A RANGE OF CO CONCENTRATIONS, ASSUMING NEGLIGIBLE EXCESS AIR

US·V·2

COAL US WV-1, CENTURY, BETHLEHEM MINES

Typical Moisture Range: 0–6%

Proximate Analysis (lb/lb dry coal)

Ash	0.1273
Volatile Matter	0.3558
Fixed Carbon	0.5169
Total	1.0000

Ultimate Analysis (lb/lb dry coal)

Carbon (C)	0.7312
Hydrogen (H)	0.0490
Sulphur (S)	0.0295
Nitrogen (N)	0.0140
Oxygen (O)	0.0490
Ash	0.1273
Total	1.0000

Gross Calorific Value

Btu/lb:	13145
Btu/short ton:	26.29×10^6
Btu/long ton:	29.44×10^6
MJ/kg:	30.57

Conversion Factors

1 short ton = 0.8929 long tons = 2000 lb
10^6 Btu = 76.07 lb
10^6 Btu = 0.03804 short tons
10^6 Btu = 0.03396 long tons

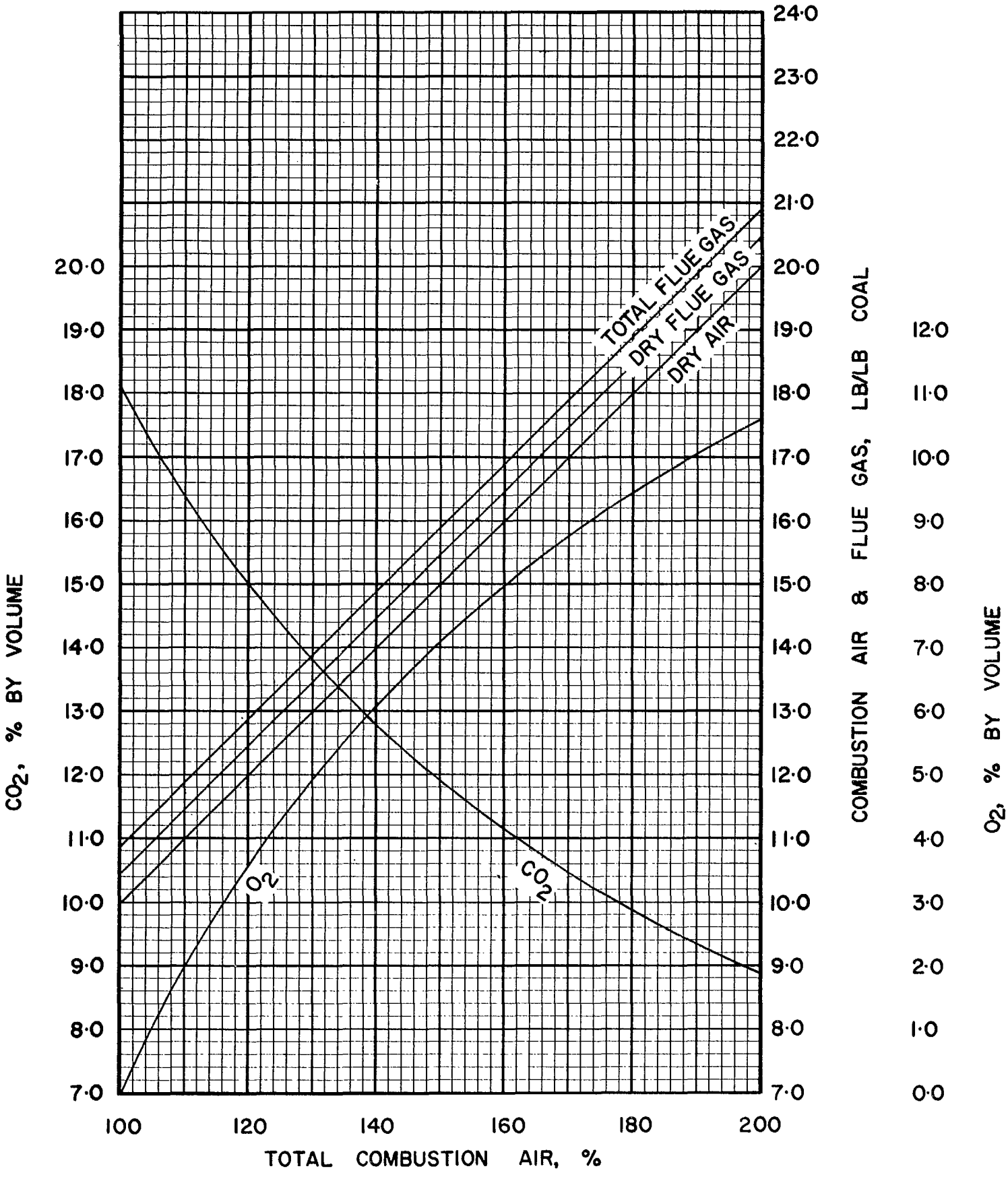

FIGURE 1· COMBUSTION DATA, WEIGHT BASIS

US·WV·1

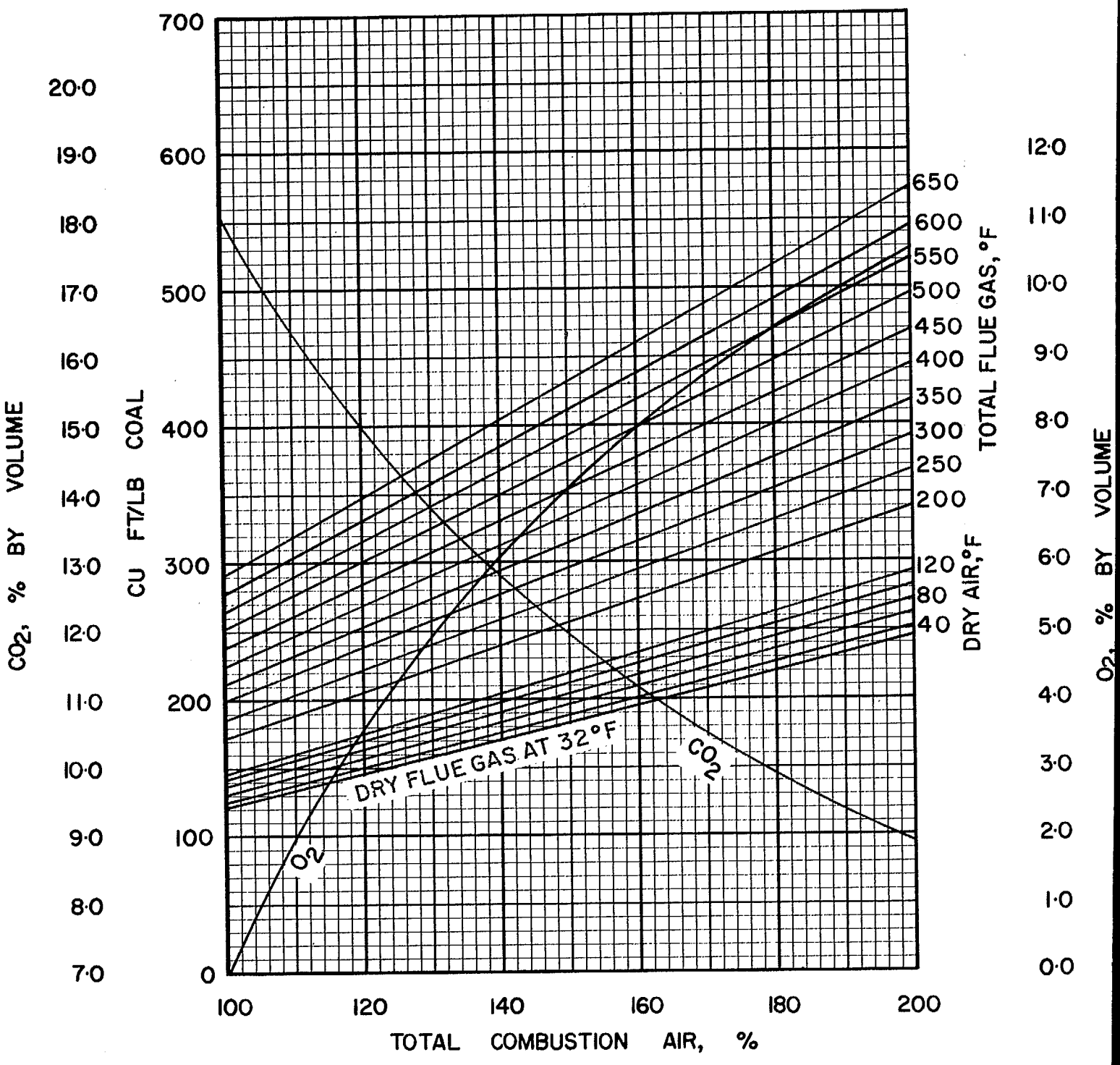

FIGURE 2· COMBUSTION DATA, VOLUME BASIS

US·WV·1

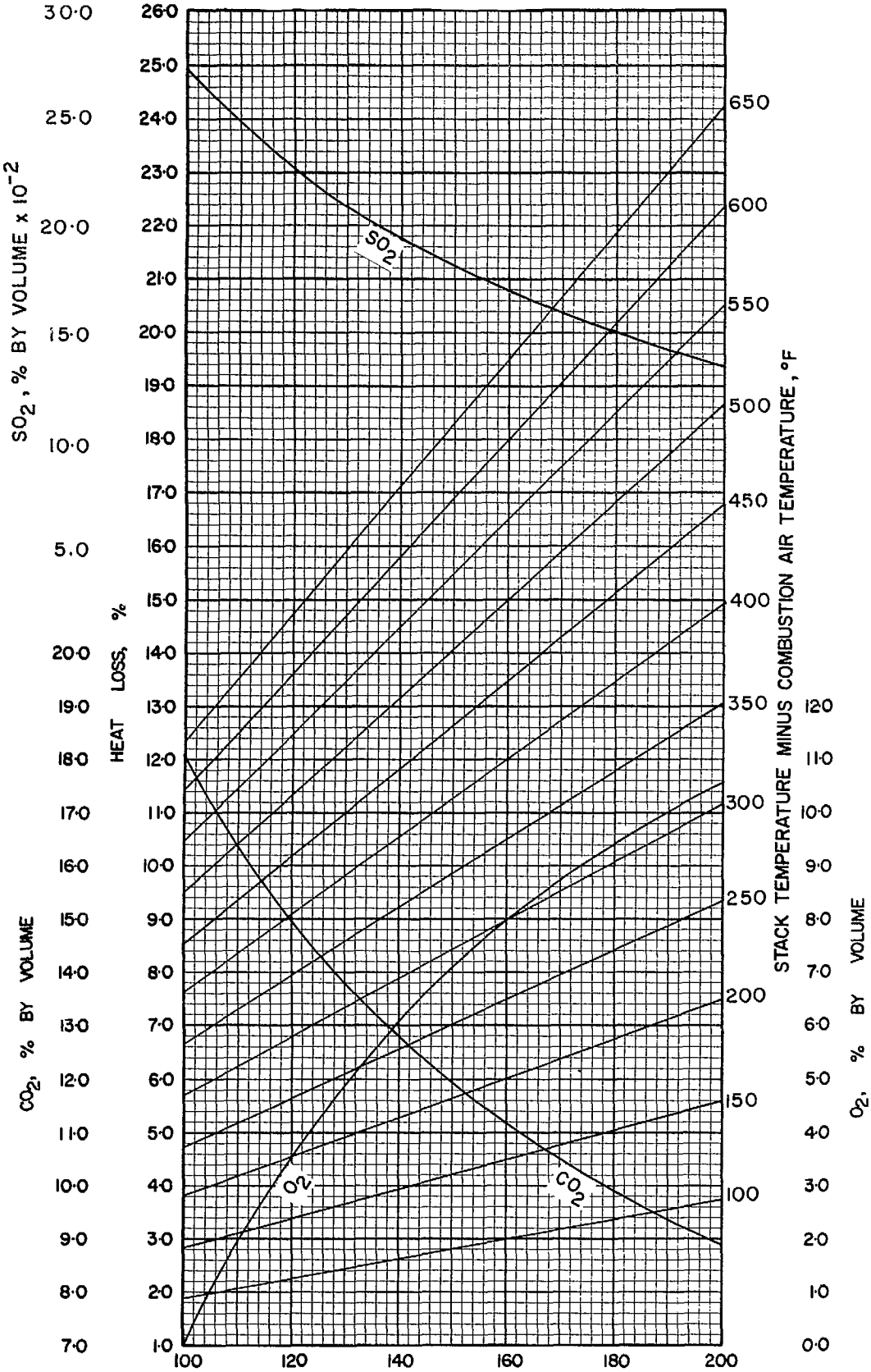

FIGURE 3· DRY FLUE GAS LOSS FOR A RANGE OF TEMPERATURE DIFFERENTIALS

US·WV·1

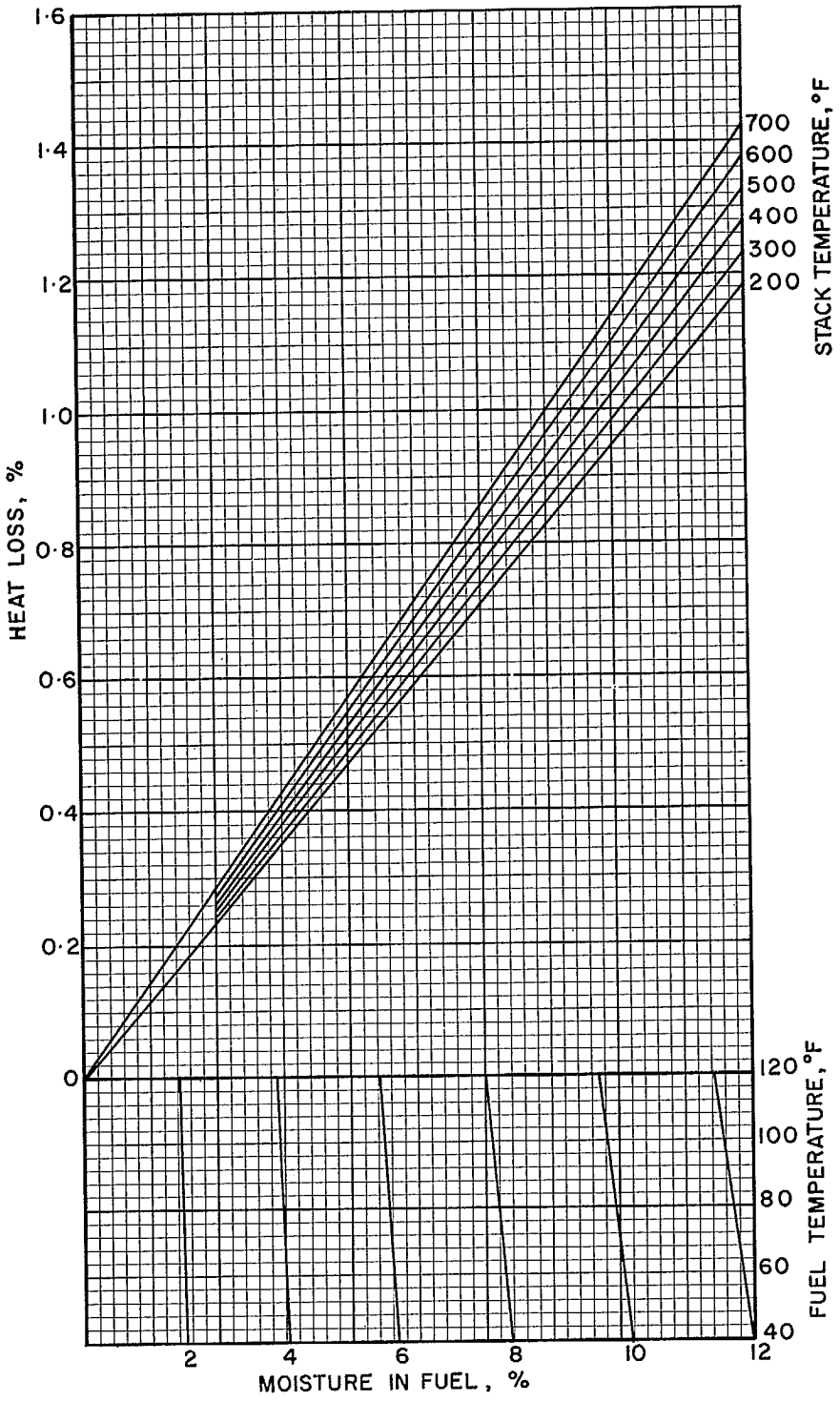

FIGURE 4· HEAT LOSS DUE TO MOISTURE IN COAL

US·WV·1

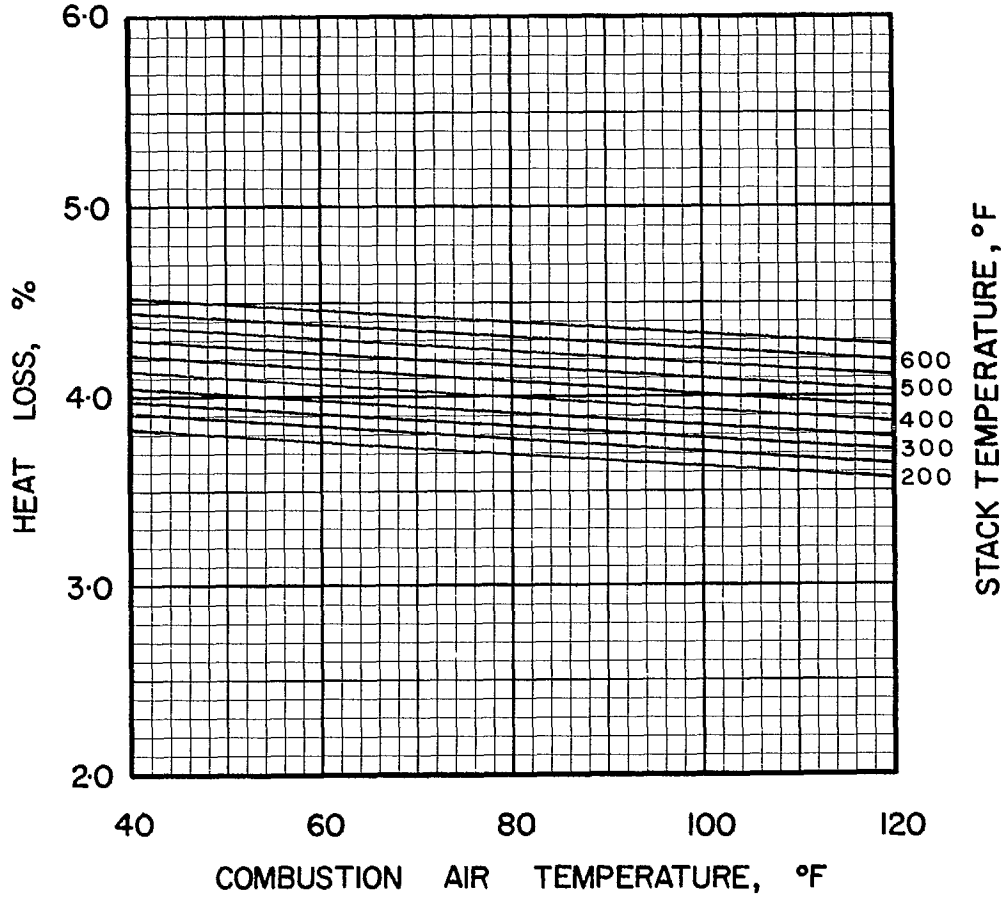

FIGURE 5· HYDROGEN LOSS FOR A RANGE OF STACK TEMPERATURES

US·WV·1

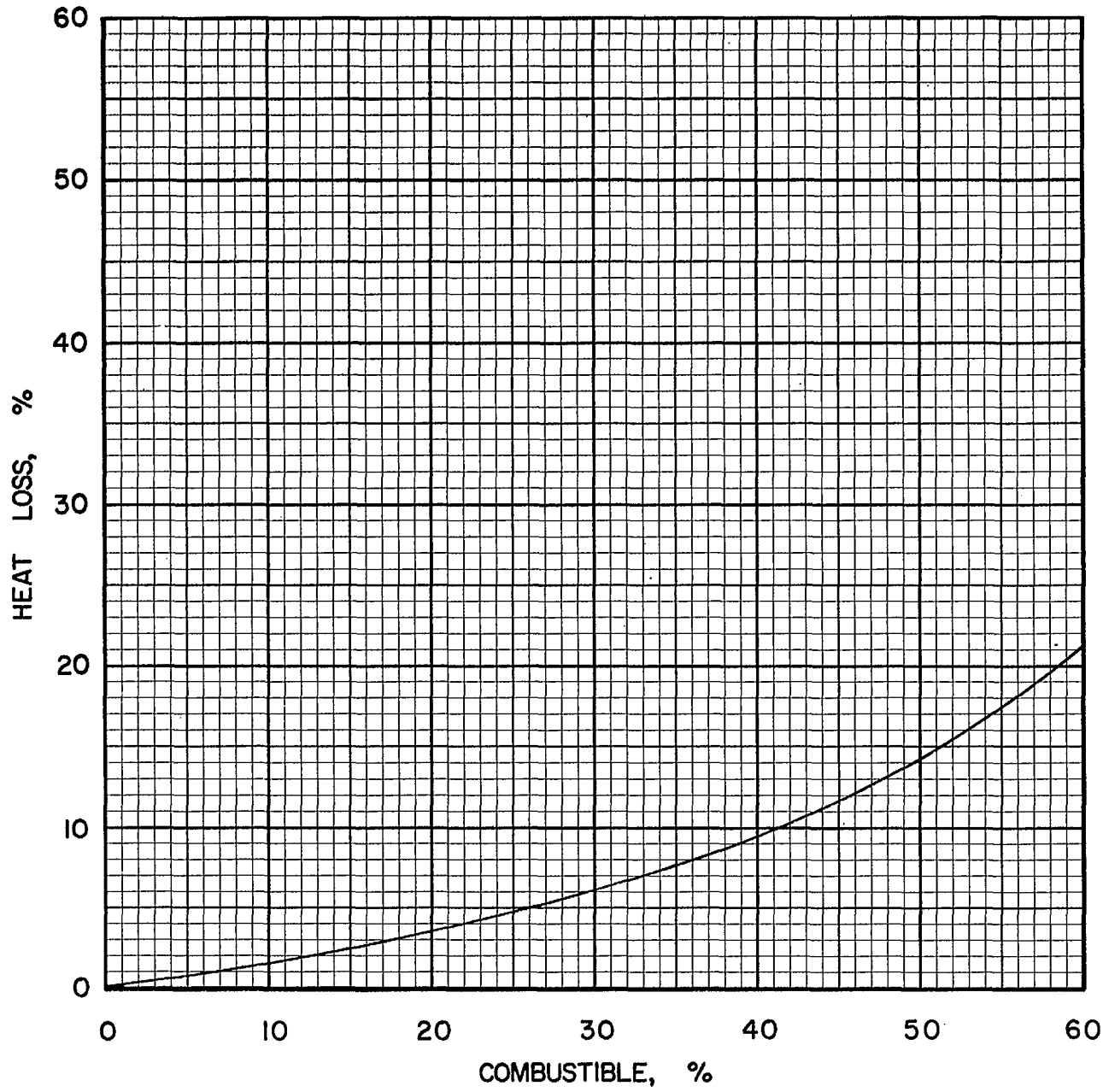

FIGURE 6 HEAT LOSS FOR A RANGE OF COMBUSTIBLE CONCENTRATIONS IN REFUSE

US·WV·1

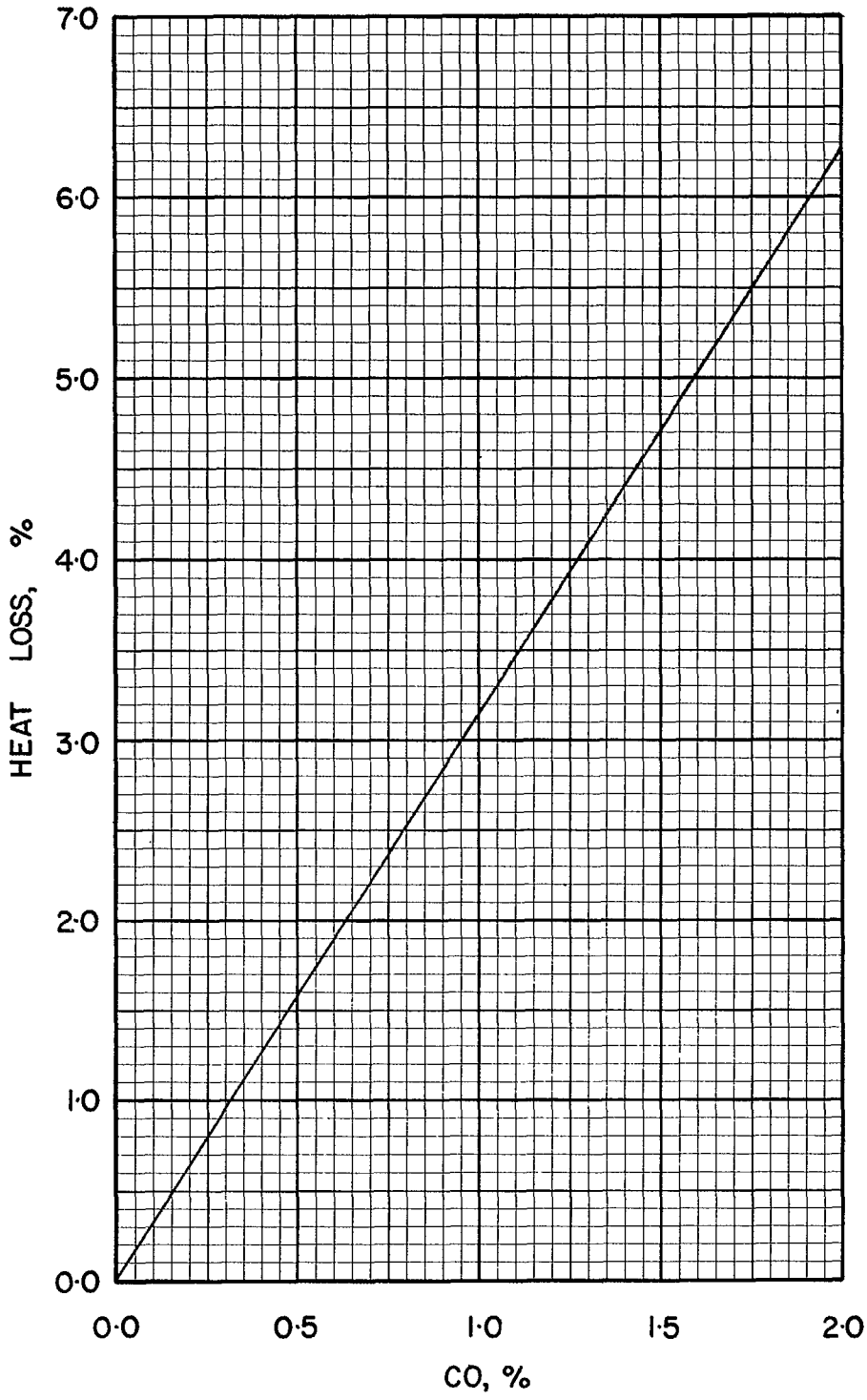

FIGURE 7 · HEAT LOSS FOR A RANGE OF CO CONCENTRATIONS, ASSUMING NEGLIGIBLE EXCESS AIR

US · WV · 1

COAL US WV-2, DAWSON, SIMPSON CREEK

Typical Moisture Range: 0–6%

Proximate Analysis (lb/lb dry coal)

Ash	0.123
Volatile Matter	0.390
Fixed Carbon	0.487
Total	1.000

Ultimate Analysis (lb/lb dry coal)

Carbon (C)	0.734
Hydrogen (H)	0.049
Sulphur (S)	0.038
Nitrogen (N)	0.013
Oxygen (O)	0.043
Ash	0.123
Total	1.000

Gross Calorific Value

Btu/lb:	13157
Btu/short ton:	26.31×10^6
Btu/long ton:	29.47×10^6
MJ/kg:	30.60

Conversion Factors

1 short ton = 0.8929 long tons = 2000 lb
10^6 Btu = 76.01 lb
10^6 Btu = 0.03800 short tons
10^6 Btu = 0.03393 long tons

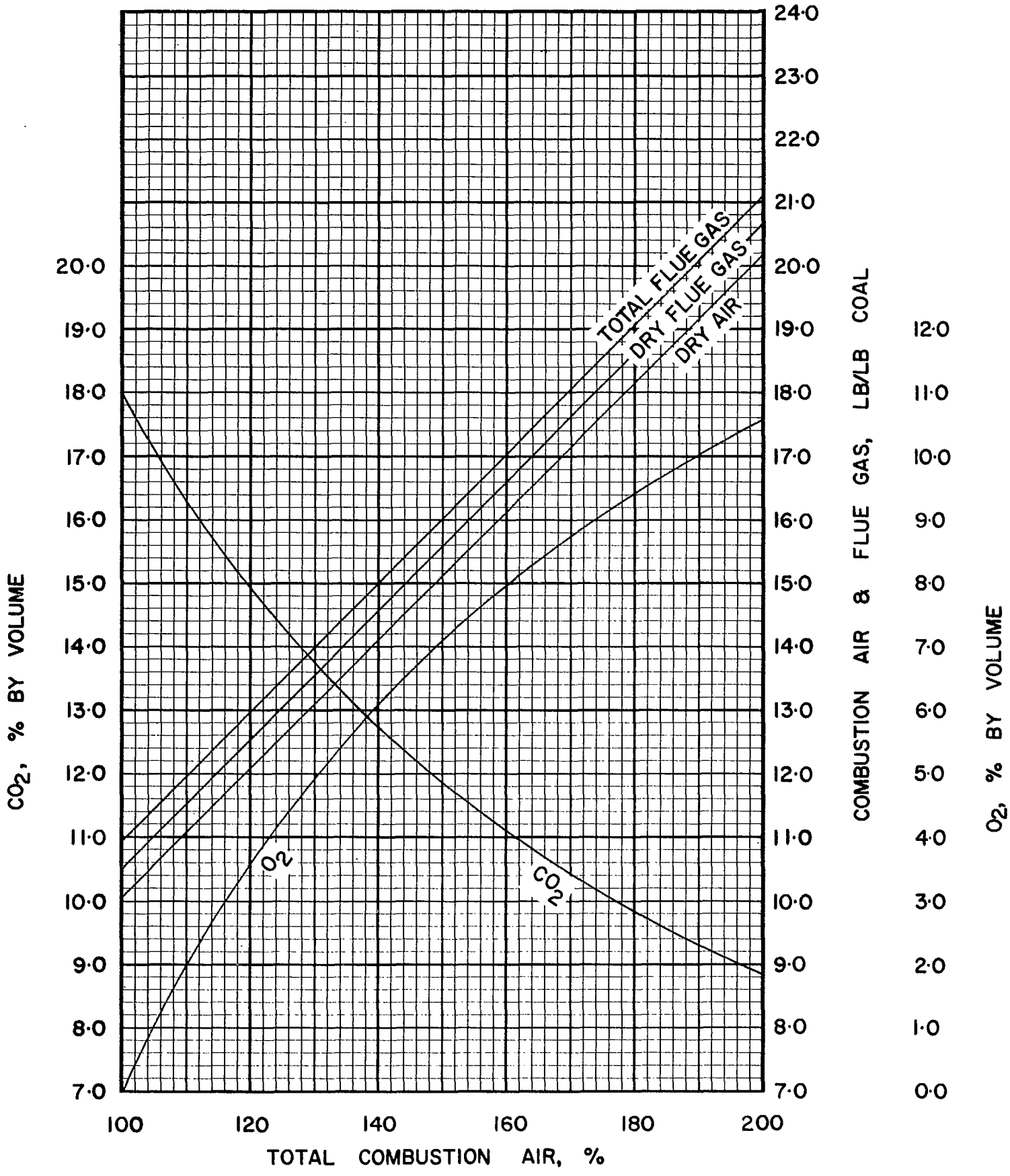

FIGURE 1· COMBUSTION DATA, WEIGHT BASIS

US·WV·2

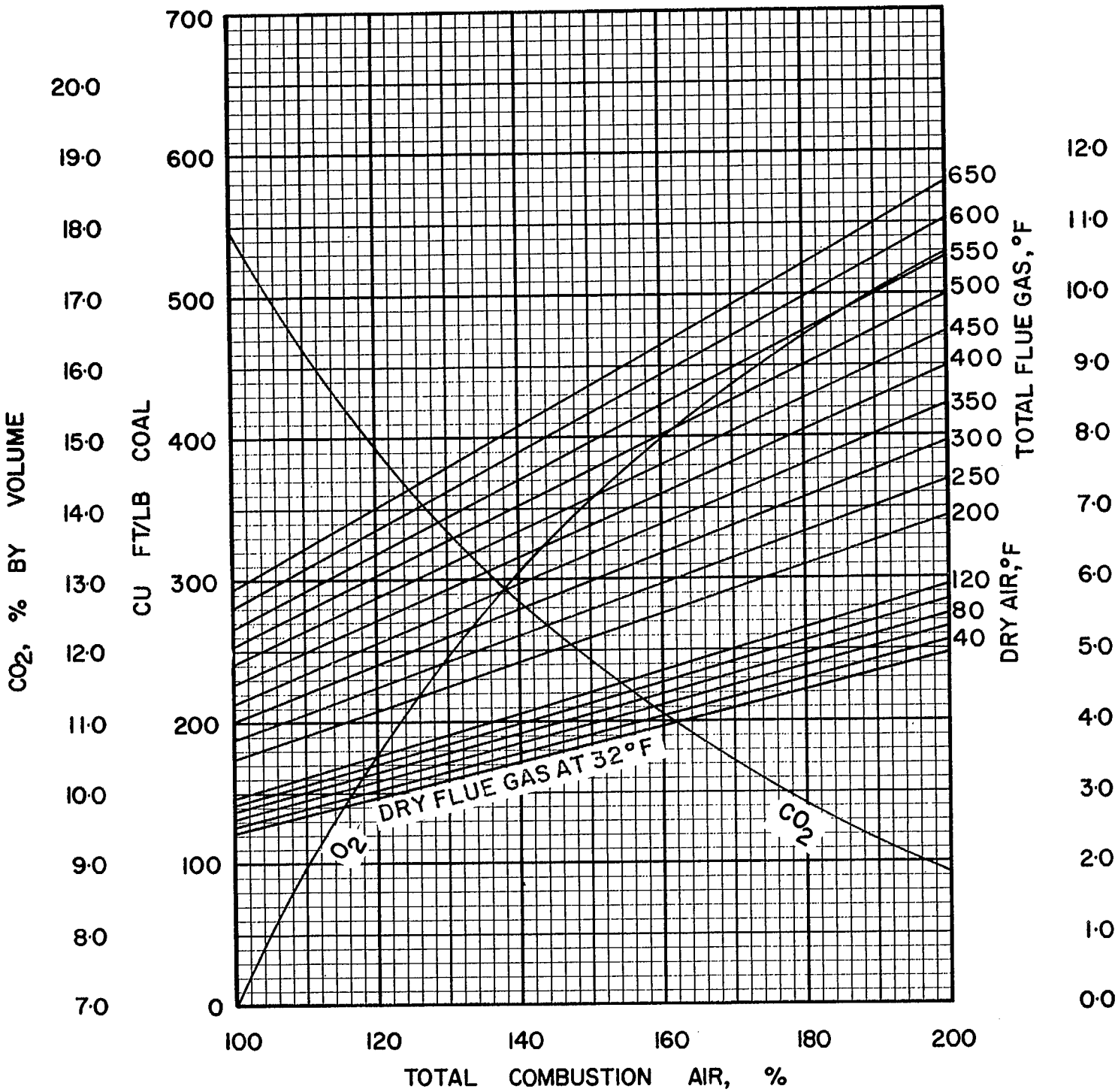

FIGURE 2· COMBUSTION DATA, VOLUME BASIS

US·WV·2

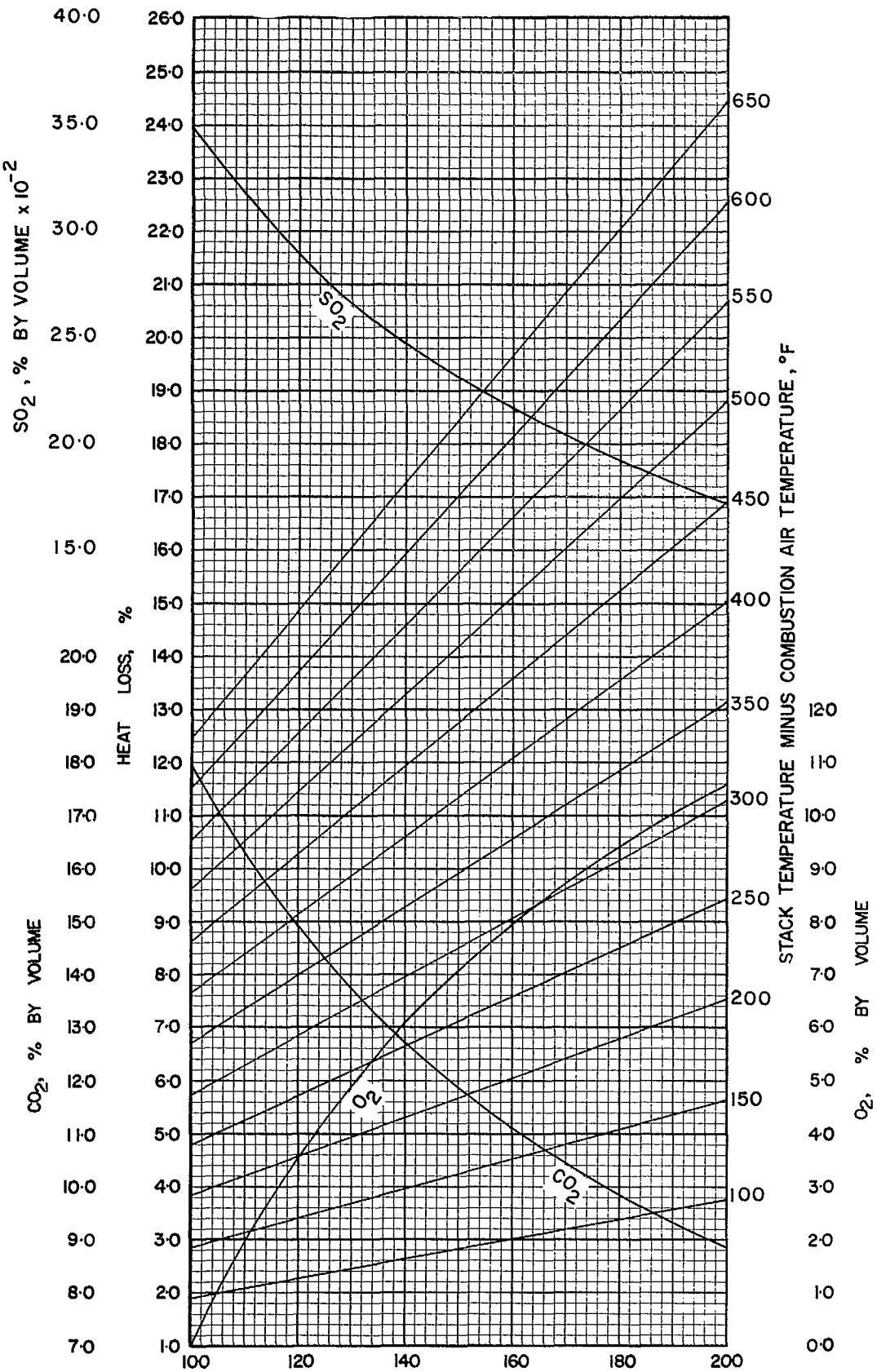

FIGURE 3· DRY FLUE GAS LOSS FOR A RANGE OF TEMPERATURE DIFFERENTIALS

US·WV·2

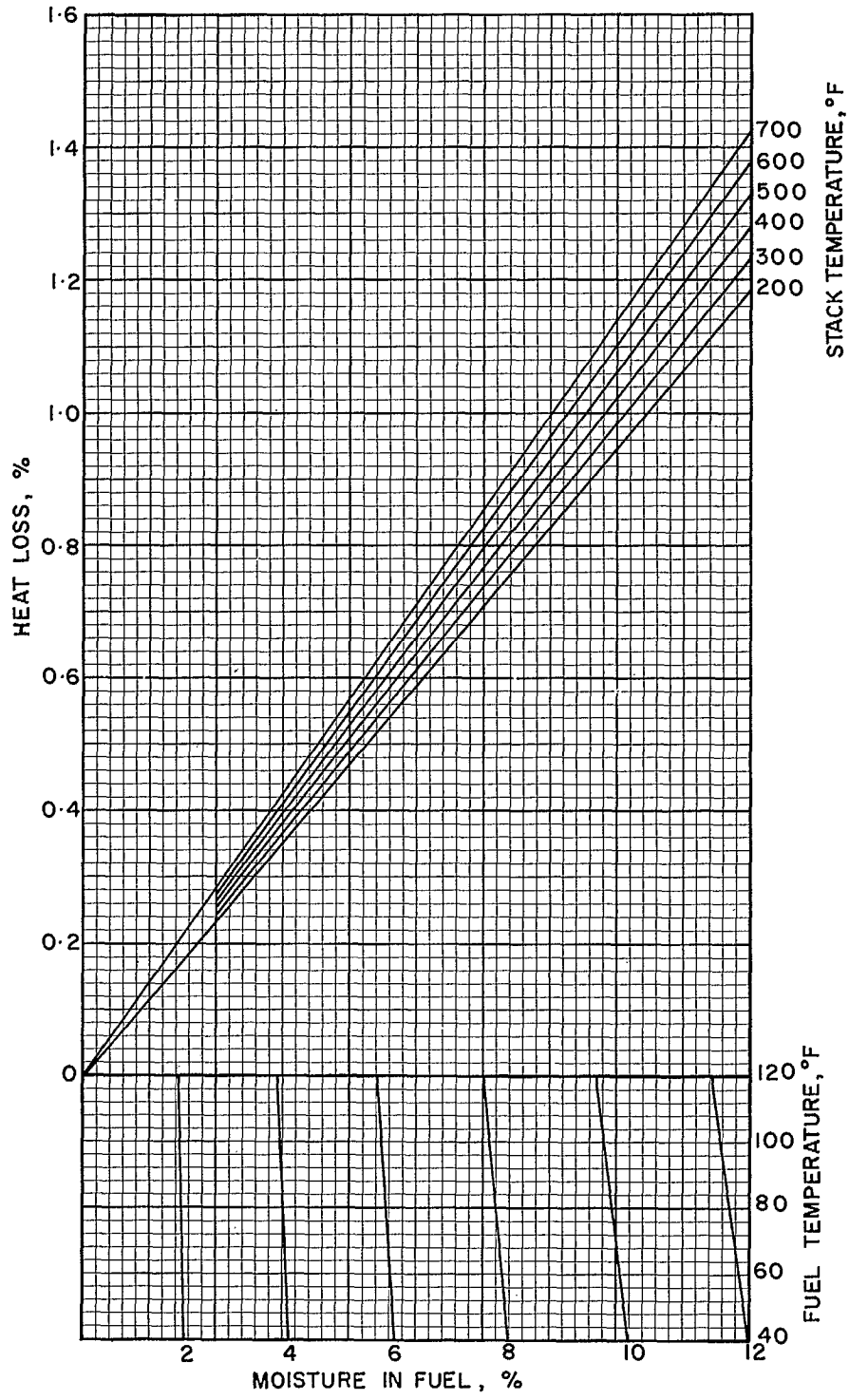

FIGURE 4· HEAT LOSS DUE TO MOISTURE IN COAL

US·WV·2

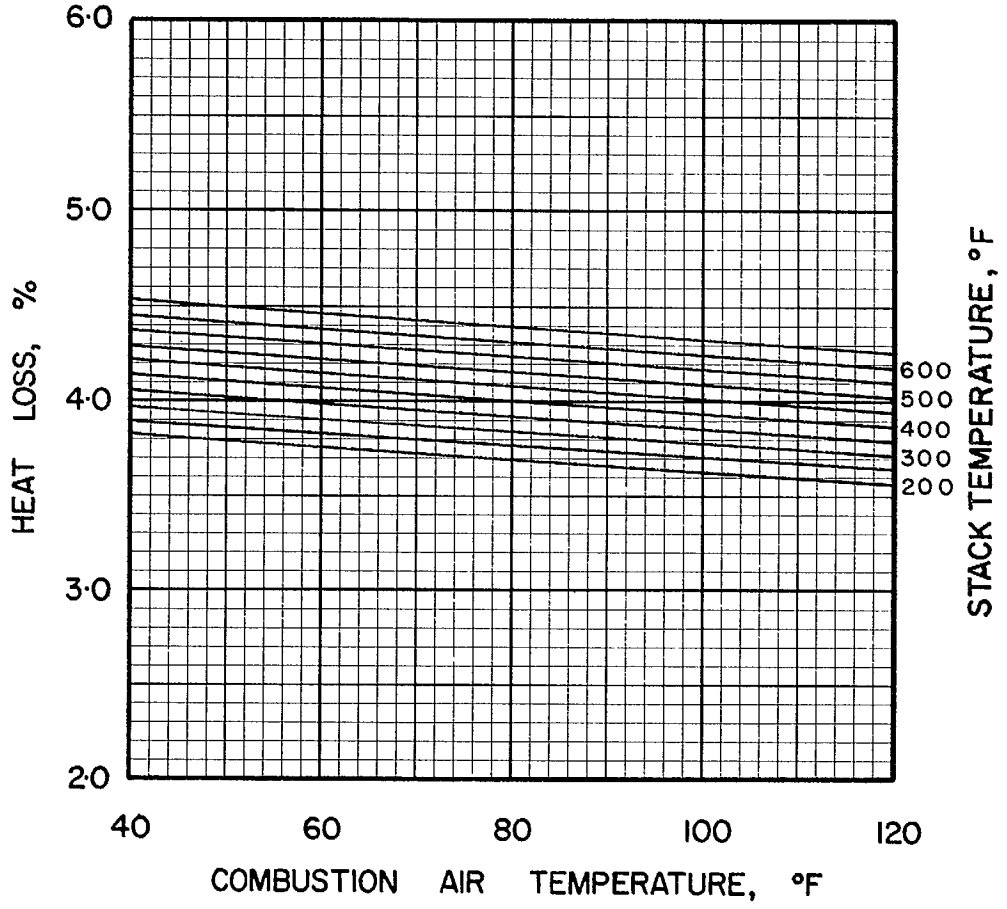

FIGURE 5· HYDROGEN LOSS FOR A RANGE OF STACK TEMPERATURES

US·WV·2

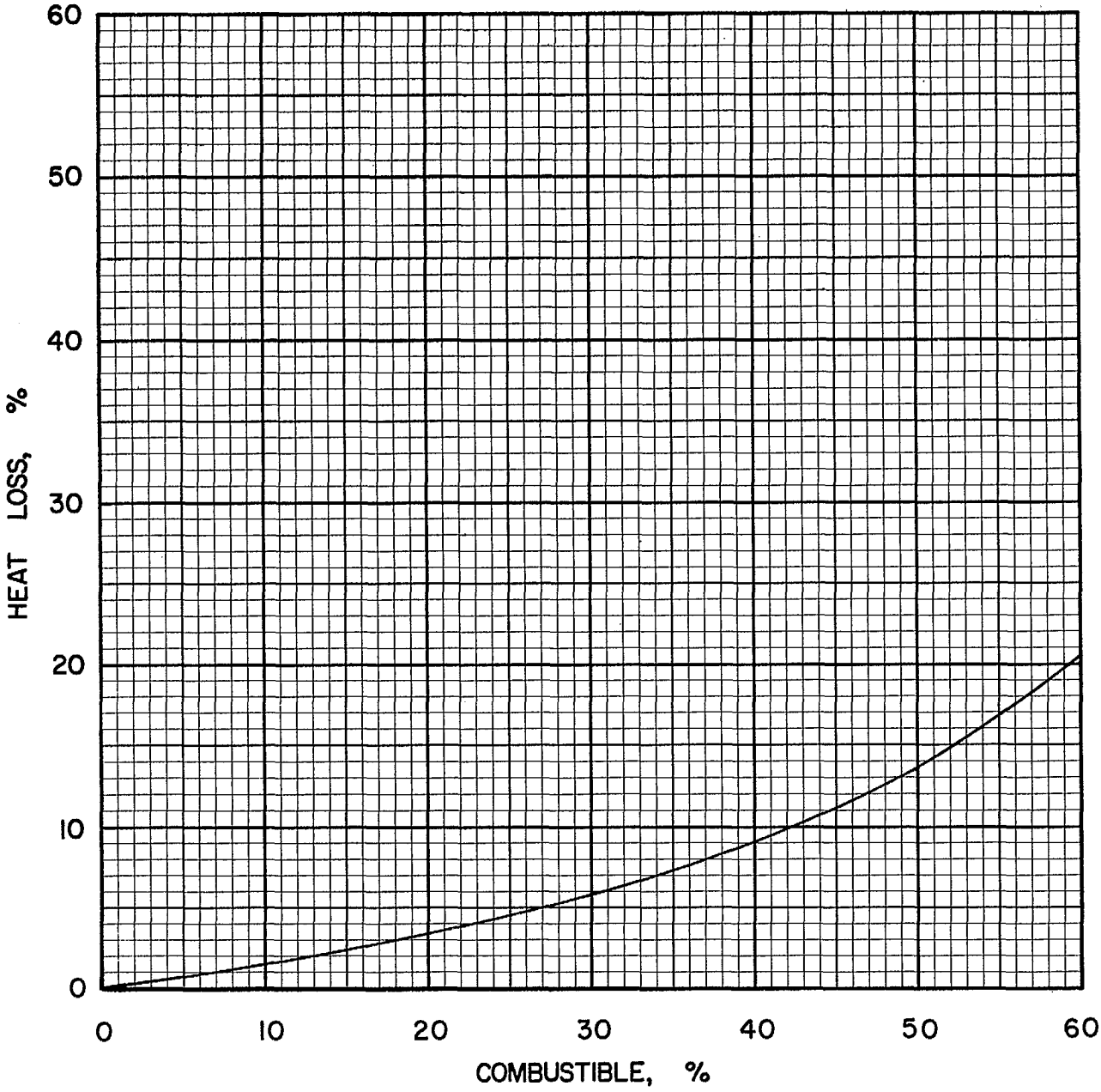

FIGURE 6 HEAT LOSS FOR A RANGE OF COMBUSTIBLE CONCENTRATIONS IN REFUSE

US·WV·2

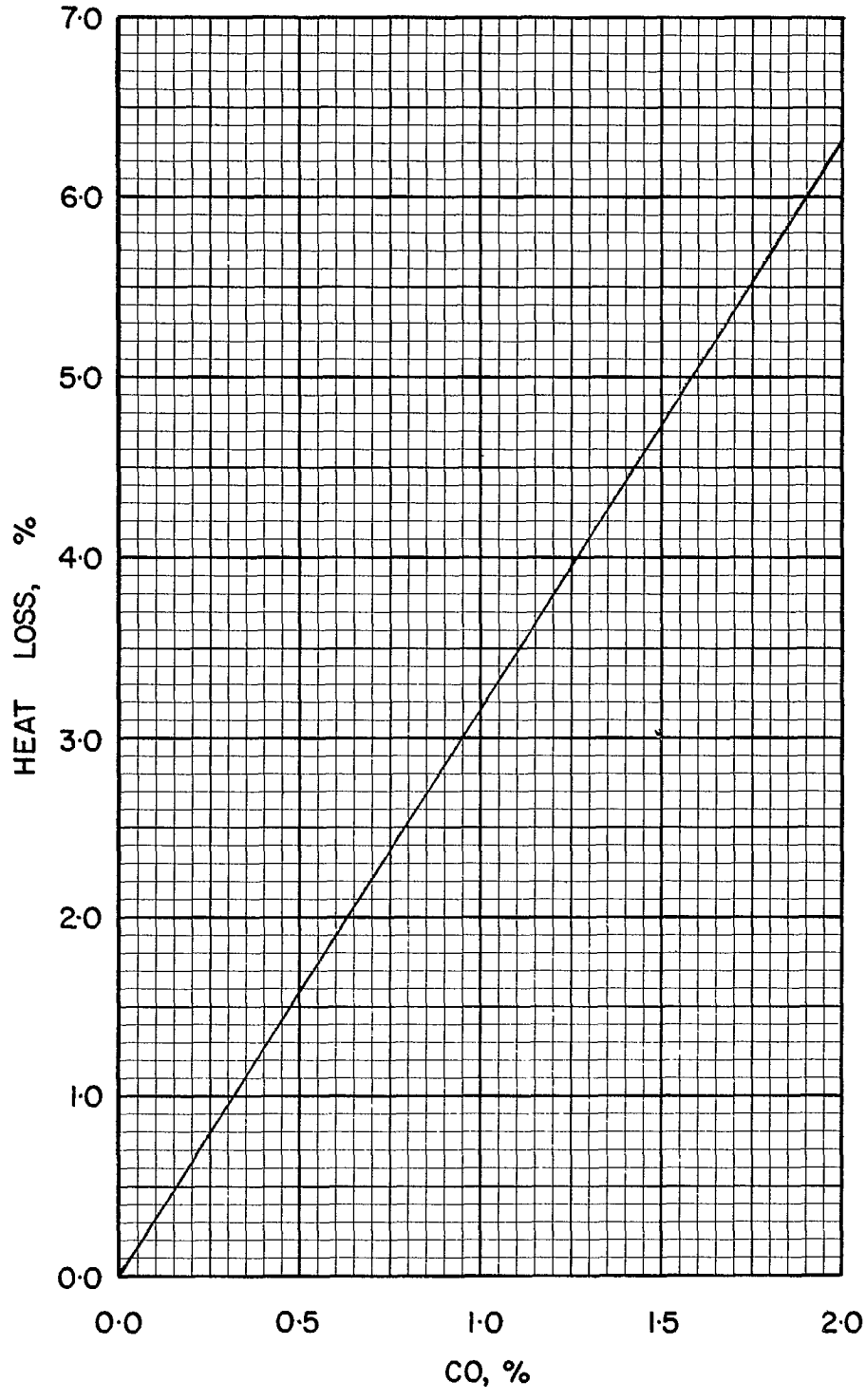

FIGURE 7 · HEAT LOSS FOR A RANGE OF CO CONCENTRATIONS, ASSUMING NEGLIGIBLE EXCESS AIR

US·WV·2

COAL US WV-3, FEDERAL No. 1, EASTERN ASSOCIATED

Typical Moisture Range: 0–6%

Proximate Analysis (lb/lb dry coal)

Ash	0.071
Volatile Matter	0.388
Fixed Carbon	0.541
Total	1.000

Ultimate Analysis (lb/lb dry coal)

Carbon (C)	0.788
Hydrogen (H)	0.052
Sulphur (S)	0.026
Nitrogen (N)	0.013
Oxygen (O)	0.050
Ash	0.071
Total	1.000

Gross Calorific Value

Btu/lb:	14028
Btu/short ton:	28.06×10^6
Btu/long ton:	31.42×10^6
MJ/kg:	32.62

Conversion Factors

1 short ton = 0.8929 long tons = 2000 lb
10^6 Btu = 71.29 lb
10^6 Btu = 0.03564 short tons
10^6 Btu = 0.03182 long tons

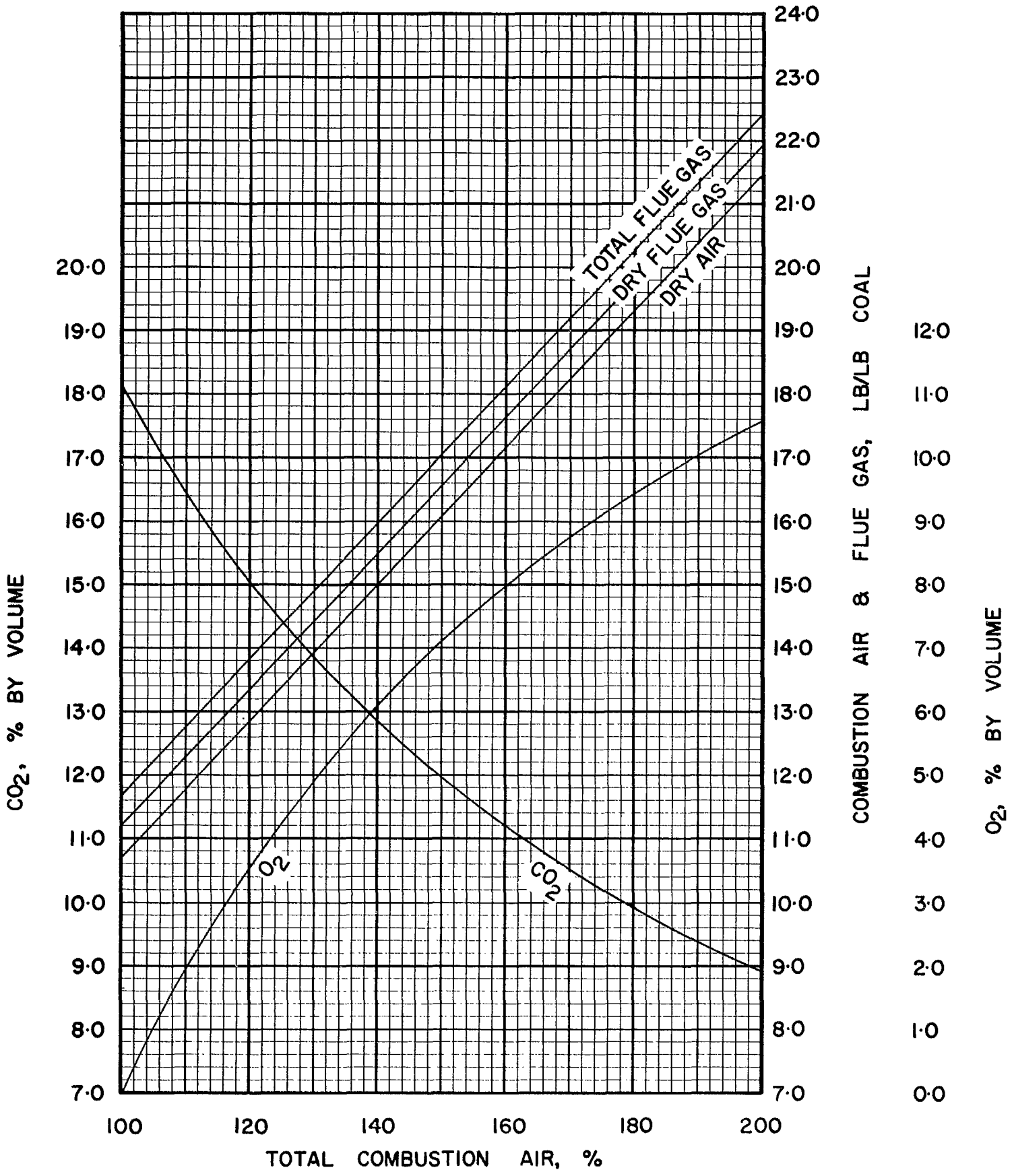

FIGURE 1· COMBUSTION DATA, WEIGHT BASIS

US·WV·3

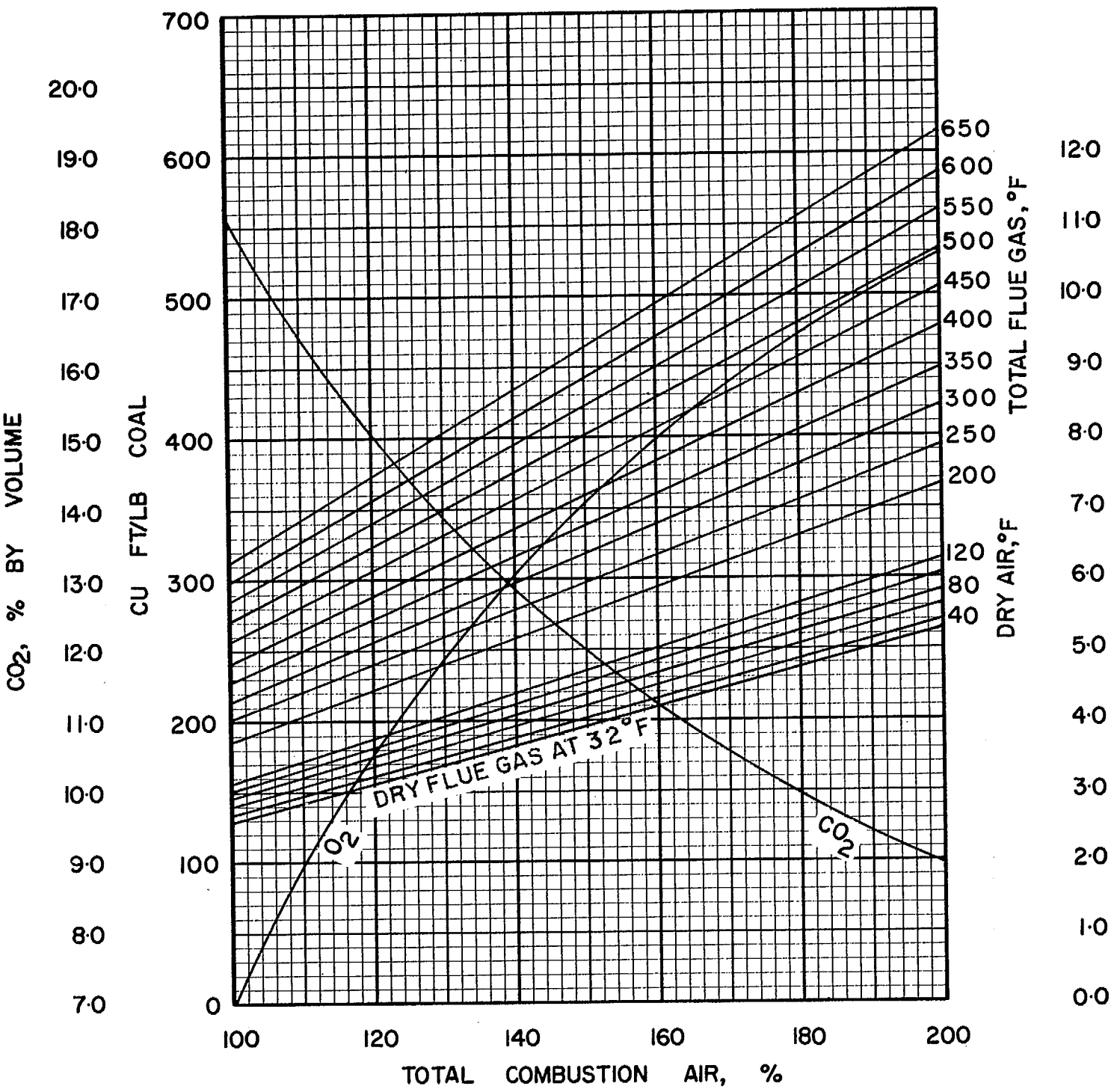

FIGURE 2· COMBUSTION DATA, VOLUME BASIS

US·WV·3

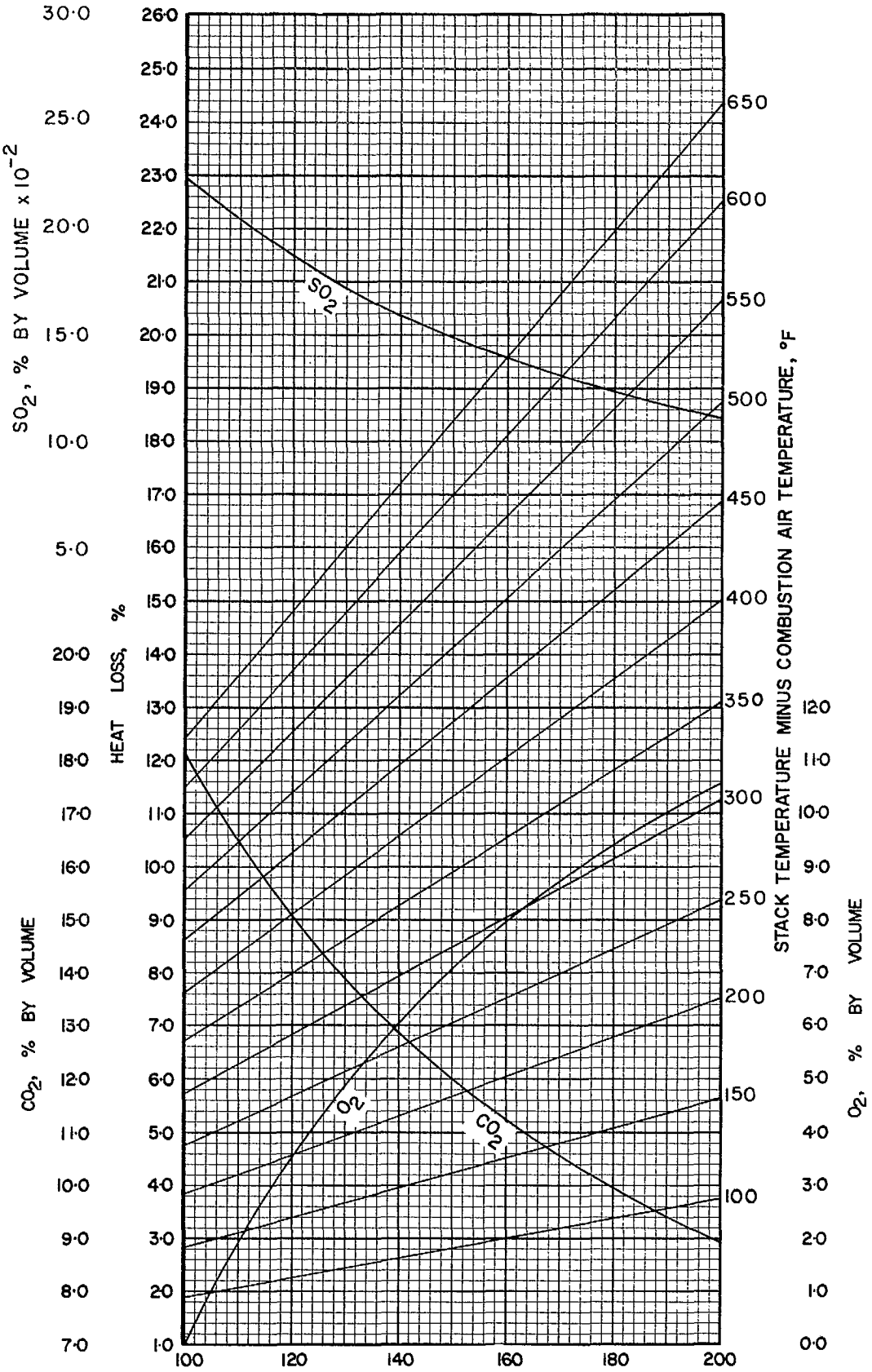

FIGURE 3· DRY FLUE GAS LOSS FOR A RANGE OF TEMPERATURE DIFFERENTIALS

US·WV·3

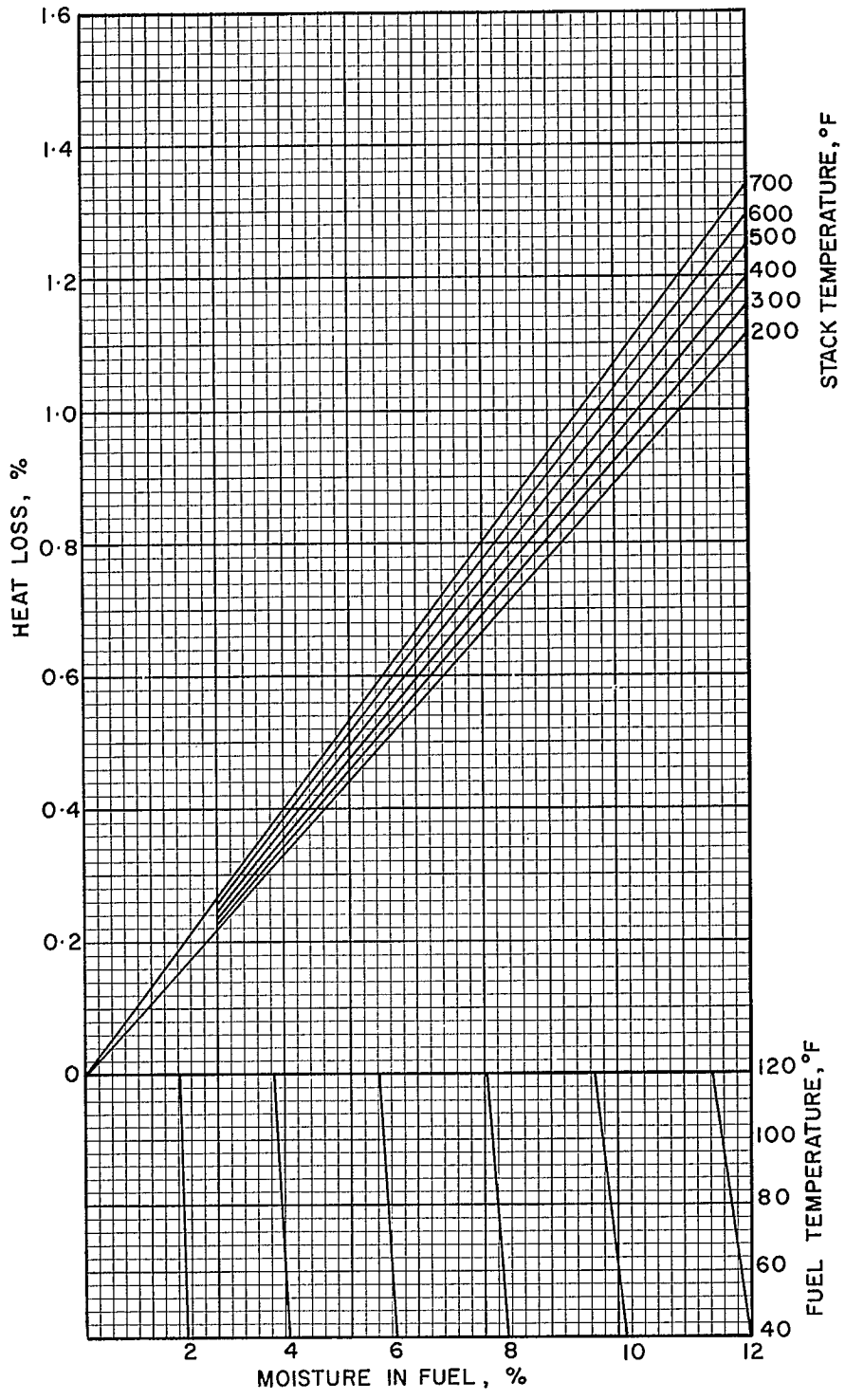

FIGURE 4· HEAT LOSS DUE TO MOISTURE IN COAL

US·WV·3

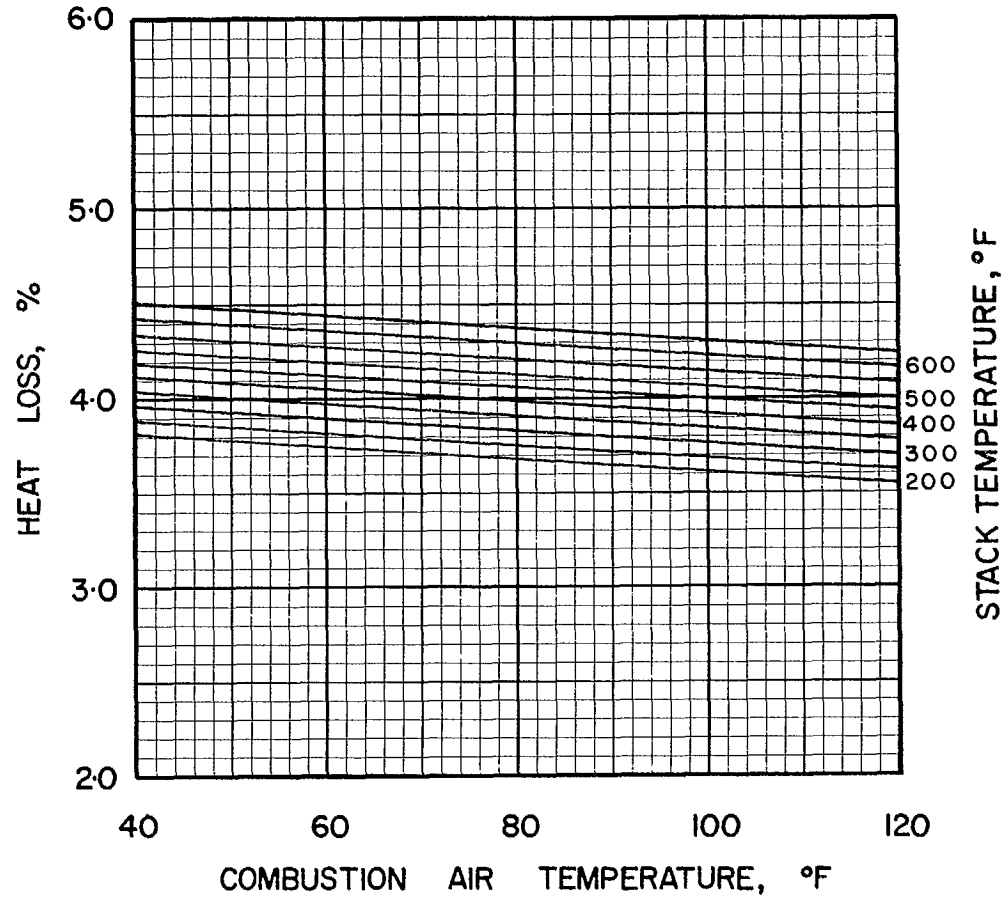

FIGURE 5· HYDROGEN LOSS FOR A RANGE OF STACK TEMPERATURES

US·WV·3

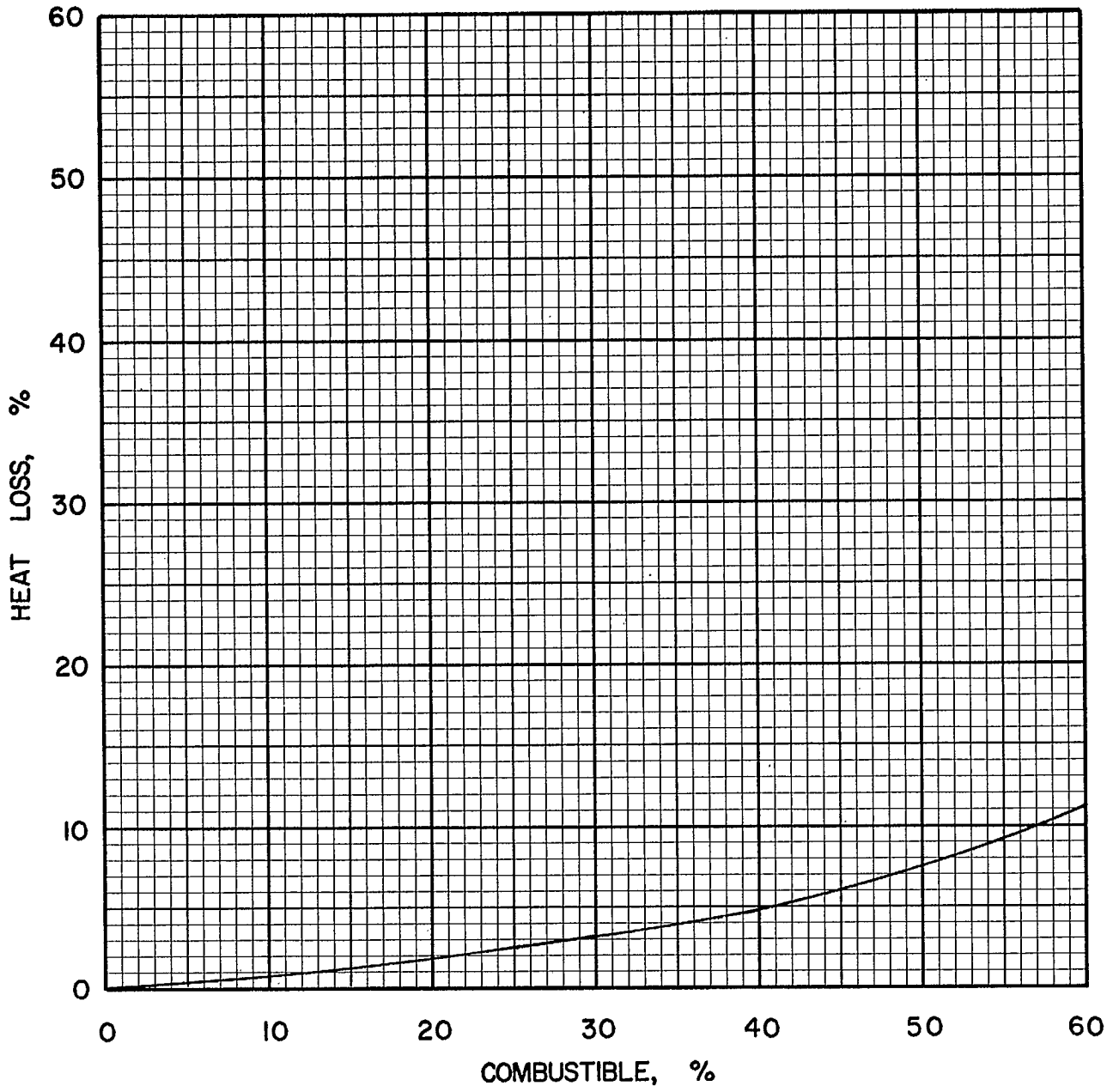

FIGURE 6 HEAT LOSS FOR A RANGE OF COMBUSTIBLE CONCENTRATIONS IN REFUSE

US·WV·3

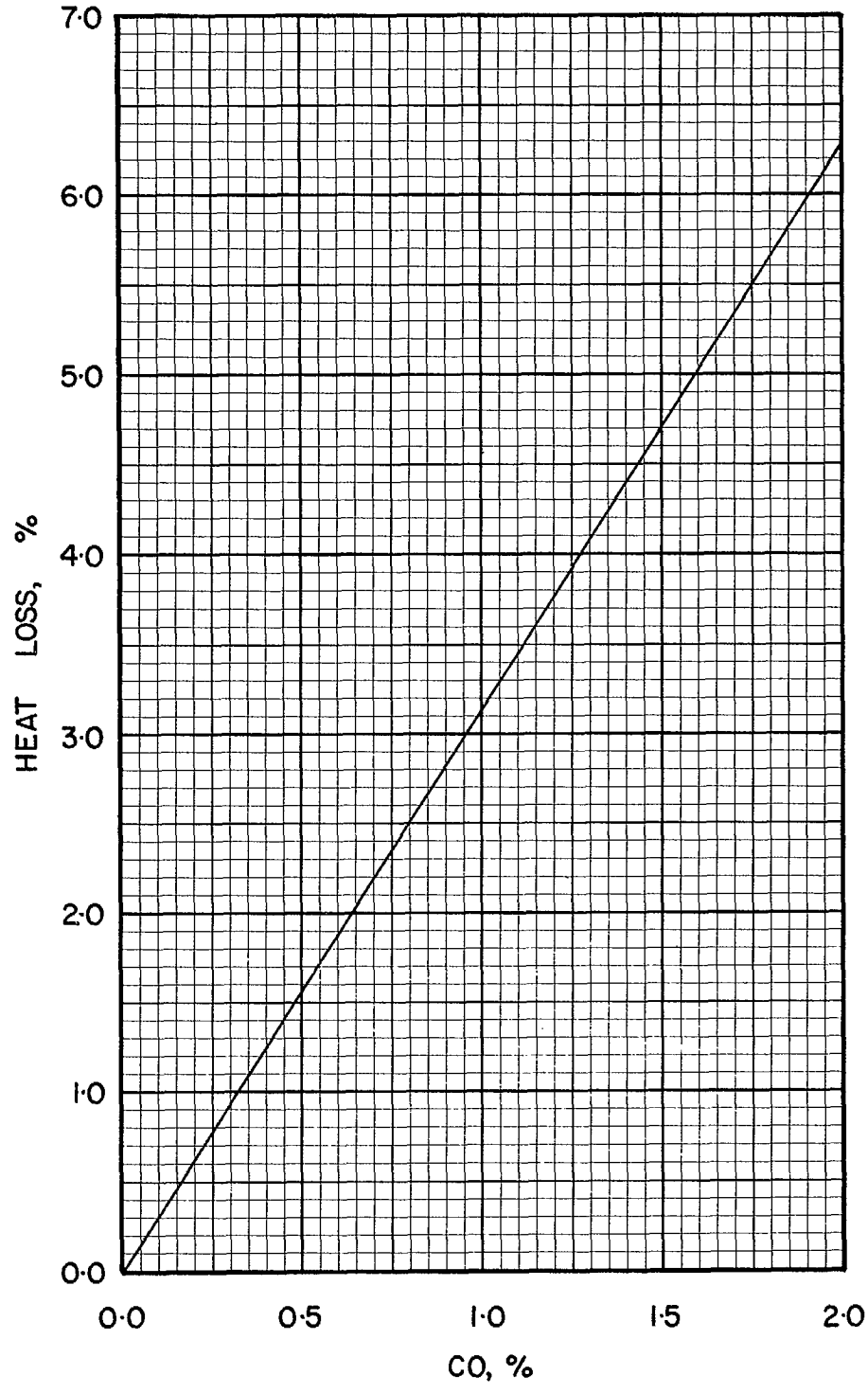

FIGURE 7 · HEAT LOSS FOR A RANGE OF CO CONCENTRATIONS, ASSUMING NEGLIGIBLE EXCESS AIR

US·WV·3

COAL US WV-4, LUNDALE, MCGREGOR

Typical Moisture Range: 0–6%

Proximate Analysis (lb/lb dry coal)

Ash	0.062
Volatile Matter	0.368
Fixed Carbon	0.570
Total	1.000

Ultimate Analysis (lb/lb dry coal)

Carbon (C)	0.803
Hydrogen (H)	0.052
Sulphur (S)	0.008
Nitrogen (N)	0.015
Oxygen (O)	0.060
Ash	0.062
Total	1.000

Gross Calorific Value

Btu/lb:	14378
Btu/short ton:	28.76×10^6
Btu/long ton:	32.21×10^6
MJ/kg:	33.44

Conversion Factors

1 short ton = 0.8929 long tons = 2000 lb
10^6 Btu = 69.55 lb
10^6 Btu = 0.03478 short tons
10^6 Btu = 0.03105 long tons

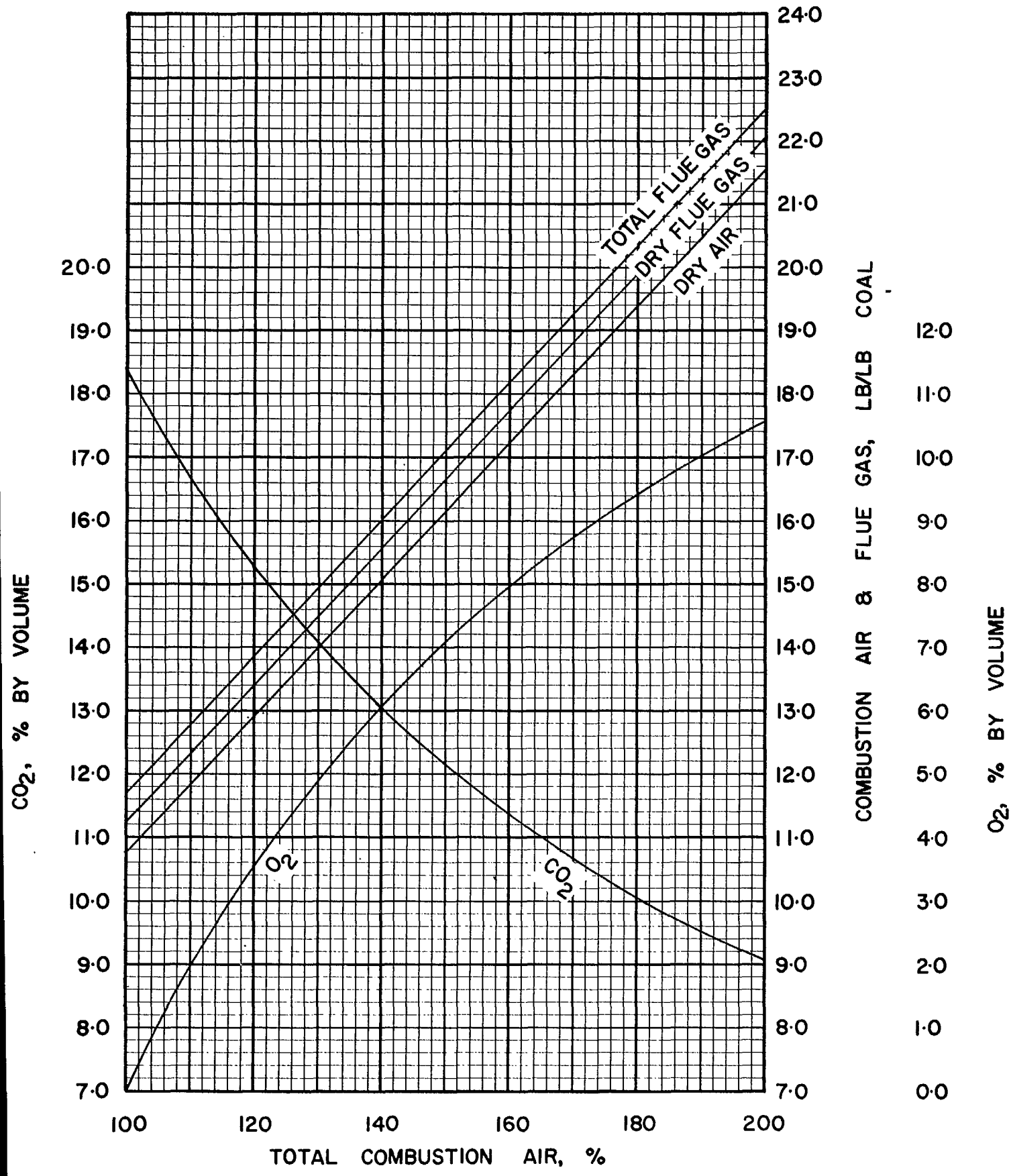

FIGURE 1· COMBUSTION DATA, WEIGHT BASIS

US·WV·4

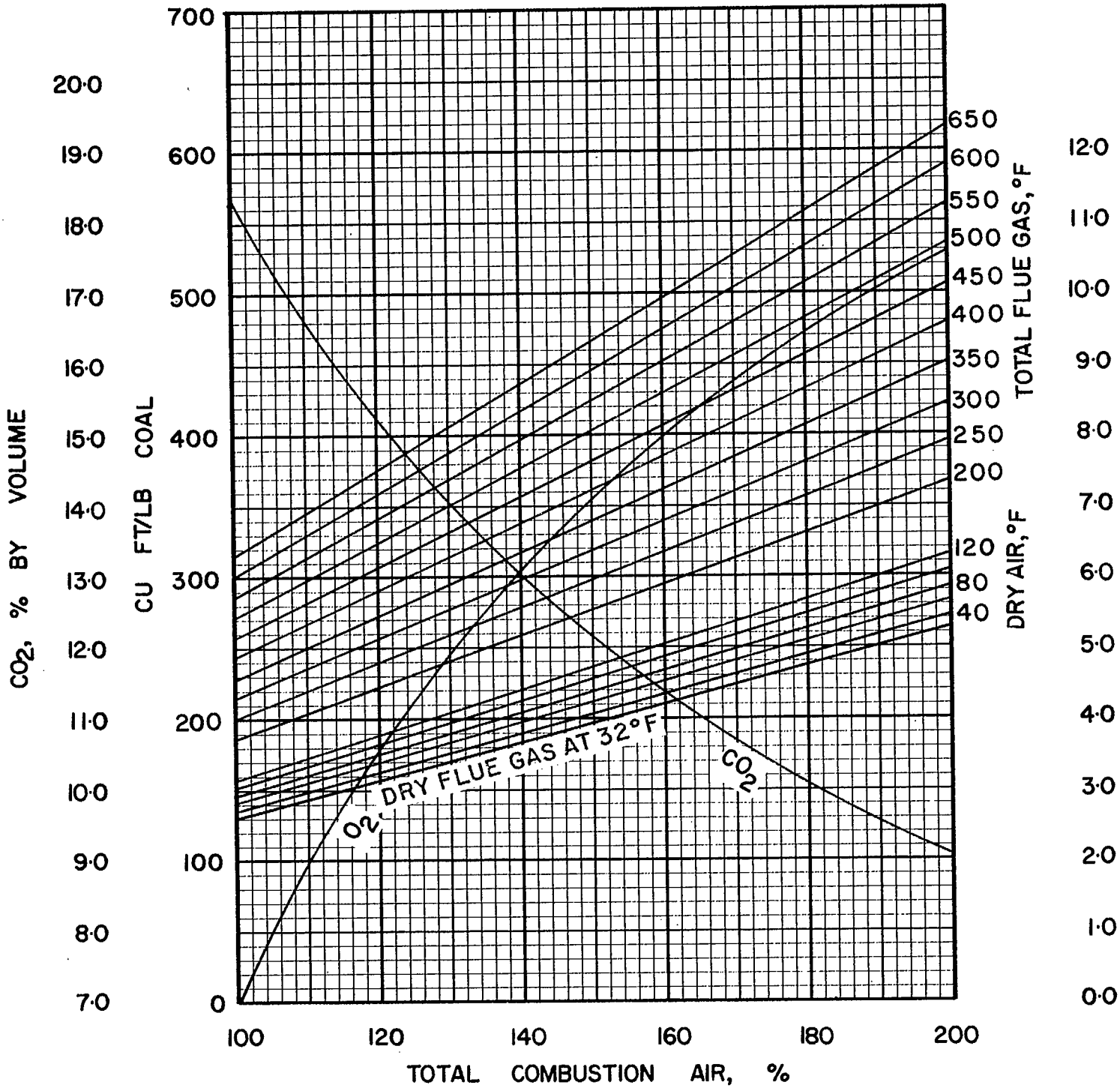

FIGURE 2· COMBUSTION DATA, VOLUME BASIS

US·WV·4

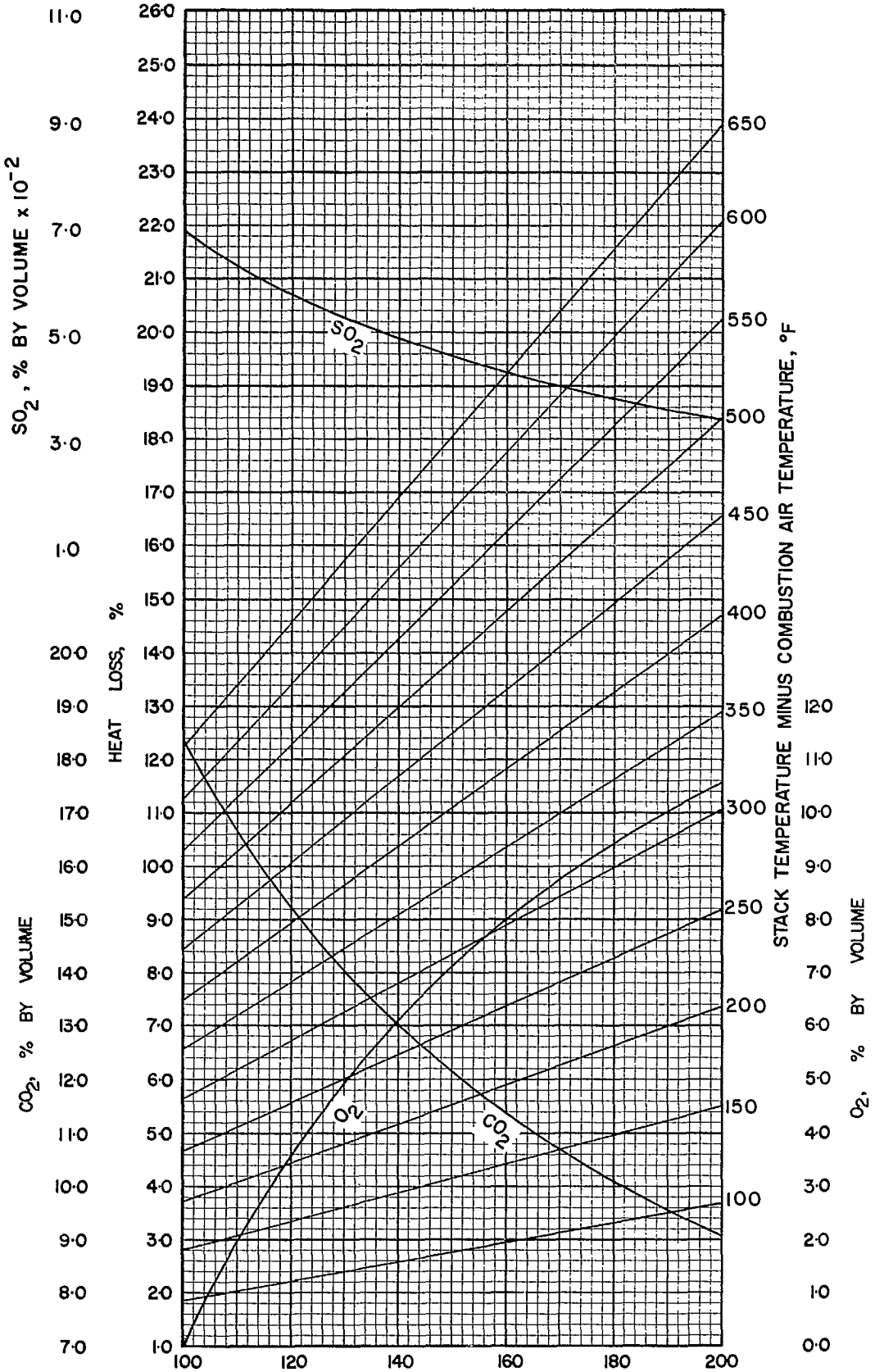

FIGURE 3· DRY FLUE GAS LOSS FOR A RANGE OF TEMPERATURE DIFFERENTIALS

US·WV·4

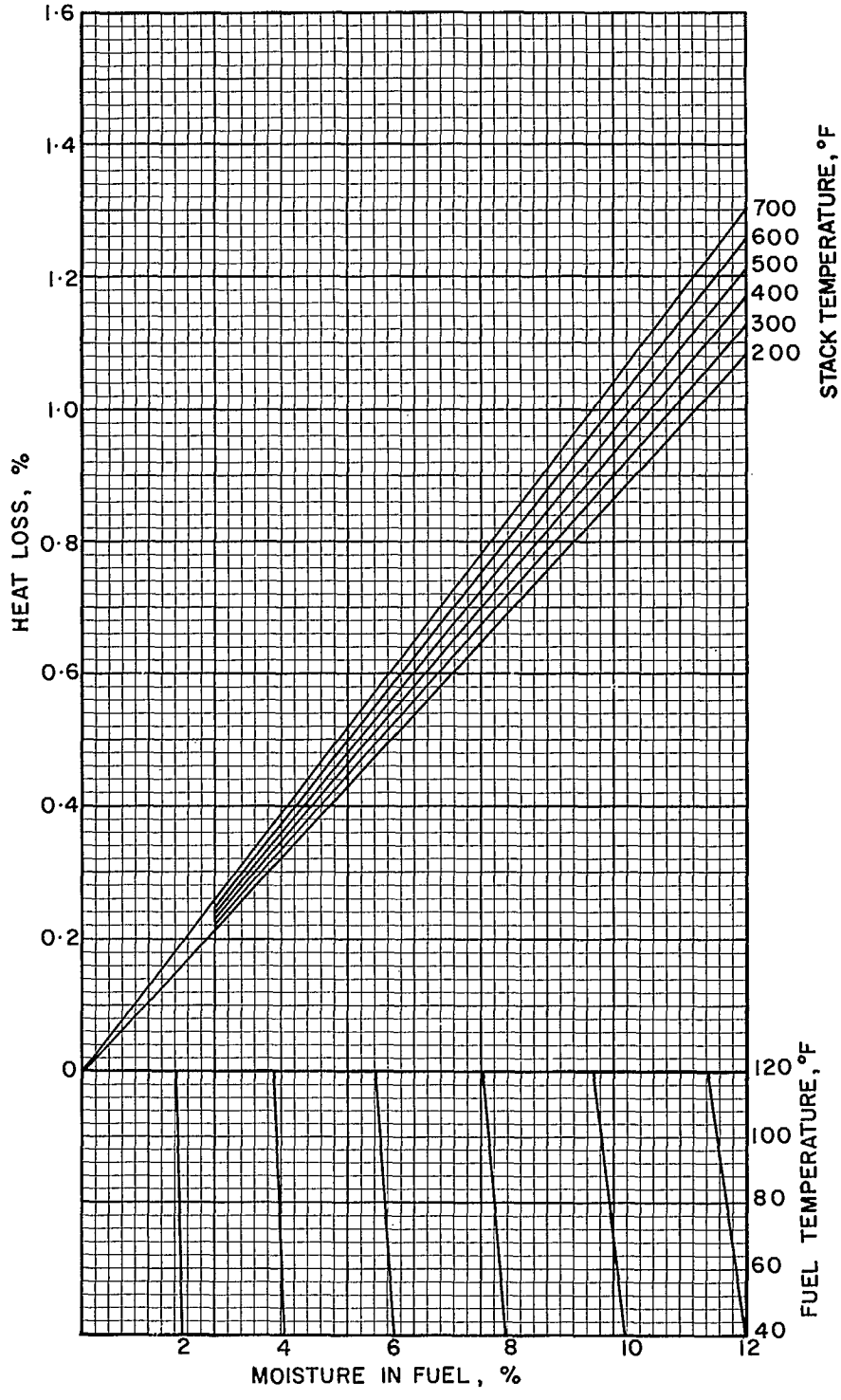

FIGURE 4· HEAT LOSS DUE TO MOISTURE IN COAL

US·WV·4

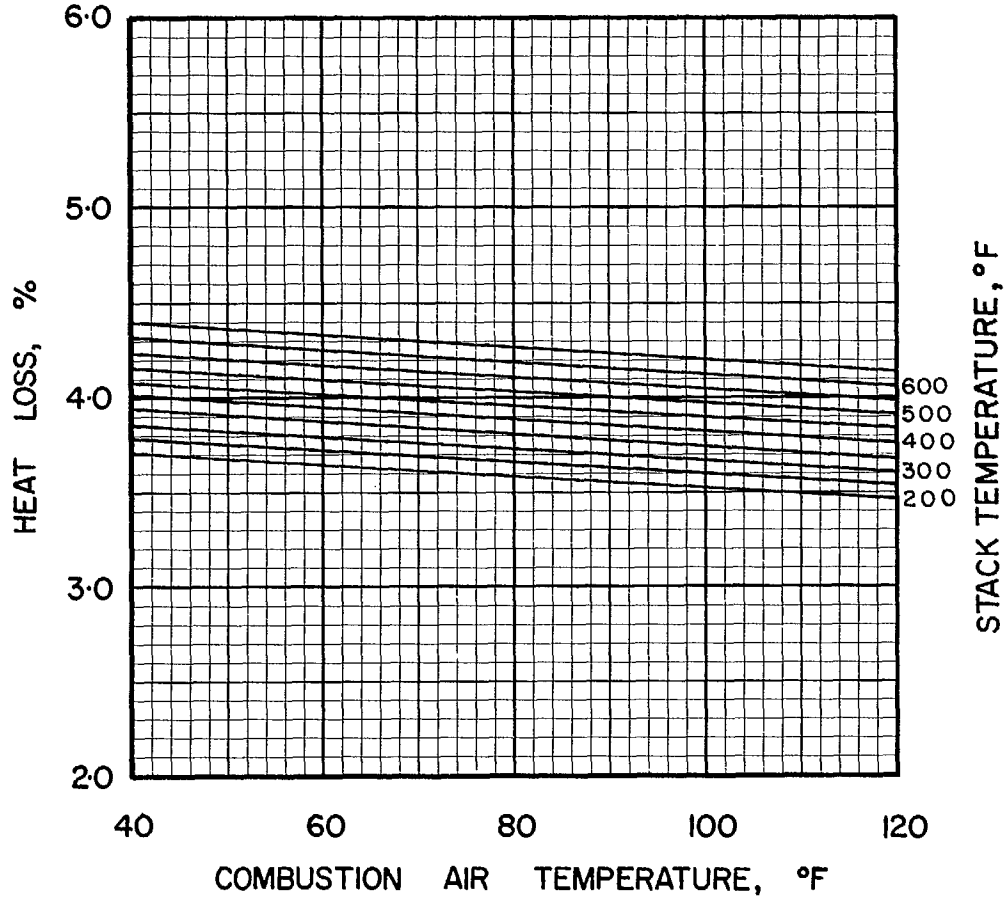

FIGURE 5· HYDROGEN LOSS FOR A RANGE OF STACK TEMPERATURES

US·WV·4

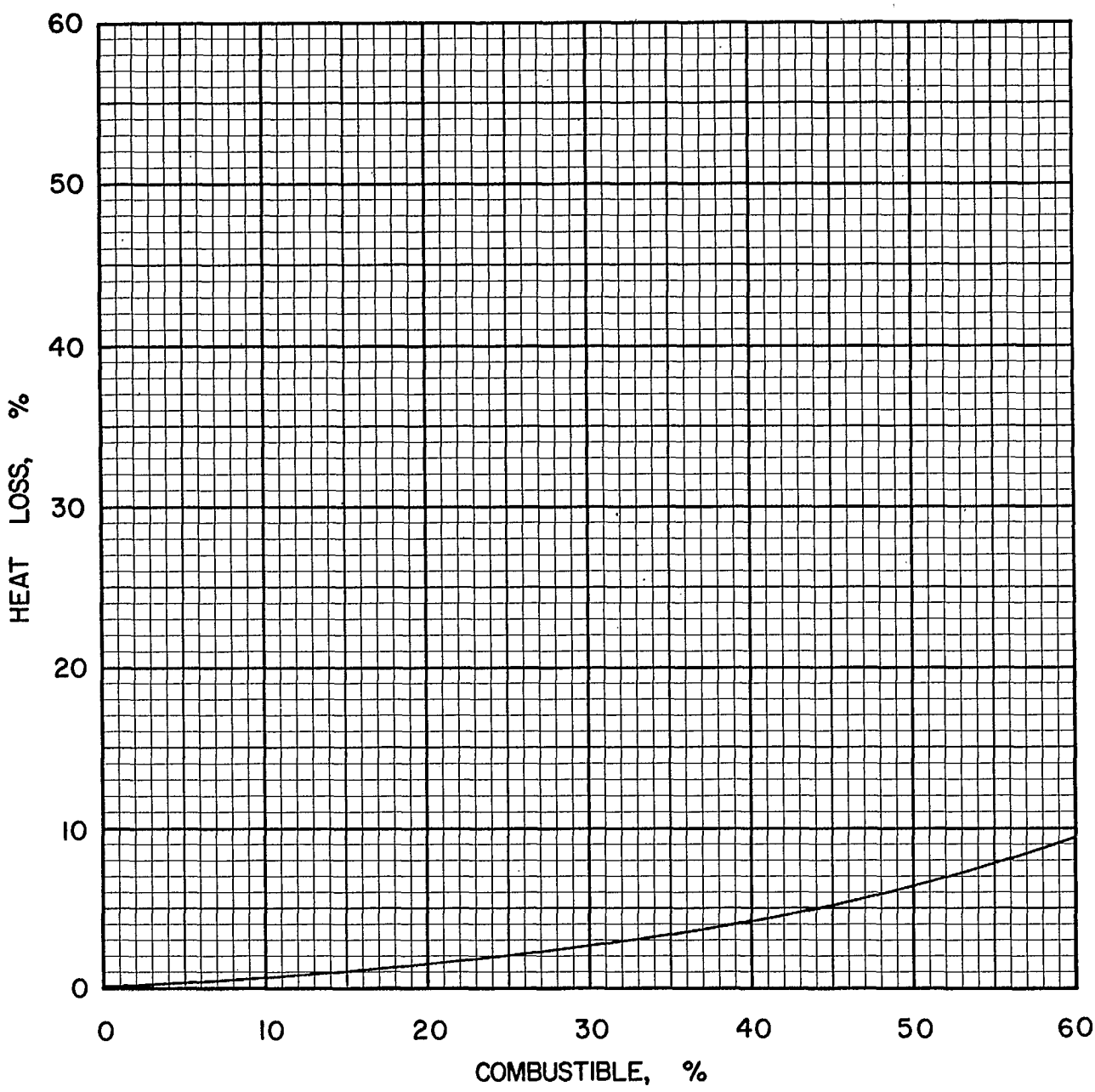

FIGURE 6 HEAT LOSS FOR A RANGE OF COMBUSTIBLE CONCENTRATIONS IN REFUSE

US·WV·4

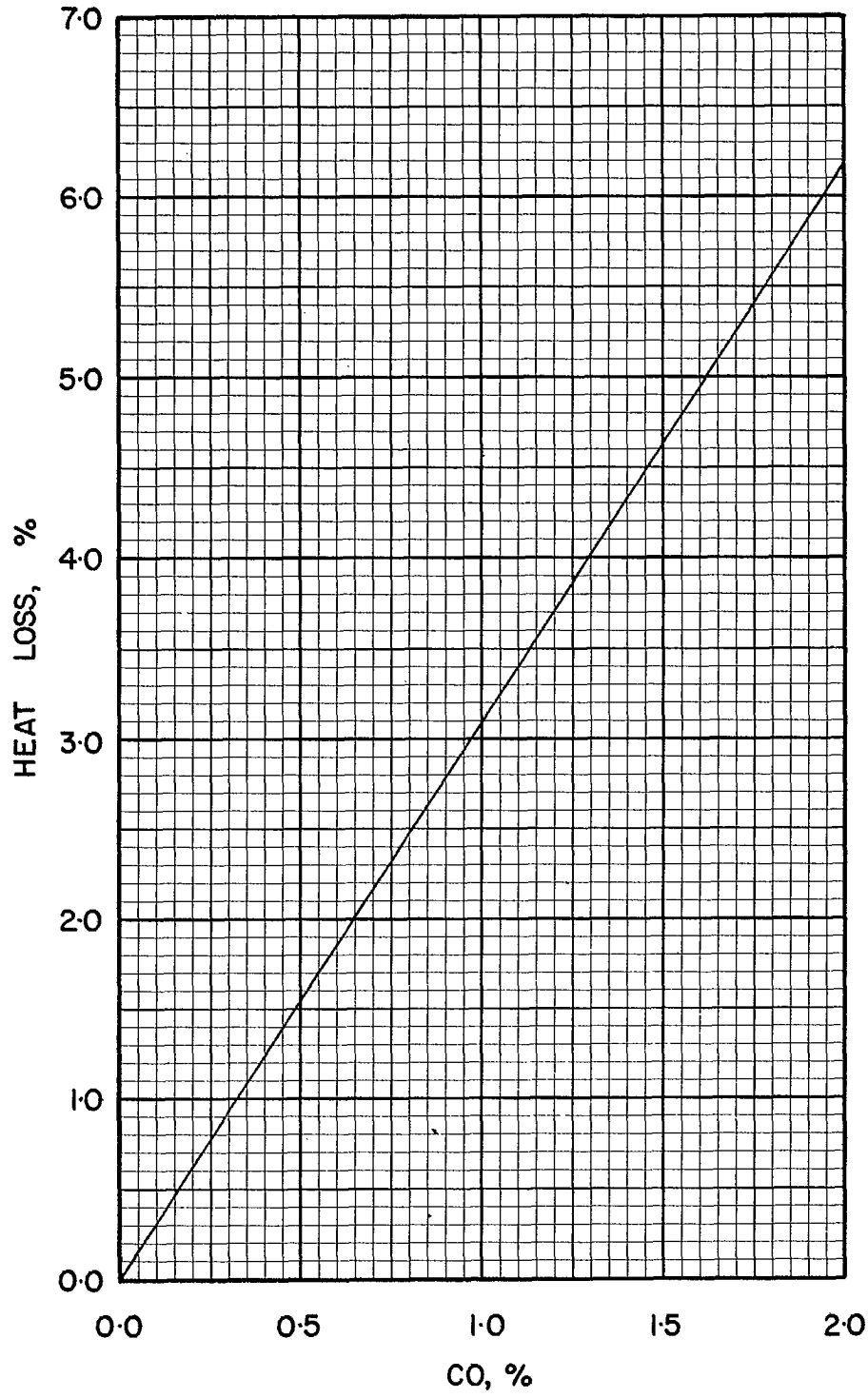

FIGURE 7 · HEAT LOSS FOR A RANGE OF CO CONCENTRATIONS, ASSUMING NEGLIGIBLE EXCESS AIR

US·WV·4

COAL US WV-5, O'DONNELL, MARION COUNTY

Typical Moisture Range: 0–8%

Proximate Analysis (lb/lb dry coal)

Ash	0.072
Volatile Matter	0.409
Fixed Carbon	0.519
Total	1.000

Ultimate Analysis (lb/lb dry coal)

Carbon (C)	0.775
Hydrogen (H)	0.052
Sulphur (S)	0.026
Nitrogen (N)	0.015
Oxygen (O)	0.060
Ash	0.072
Total	1.000

Gross Calorific Value

Btu/lb:	14080
Btu/short ton:	28.16×10^6
Btu/long ton:	31.54×10^6
MJ/kg:	32.74

Conversion Factors

1 short ton = 0.8929 long tons = 2000 lb
10^6 Btu = 71.02 lb
10^6 Btu = 0.03551 short tons
10^6 Btu = 0.03171 long tons

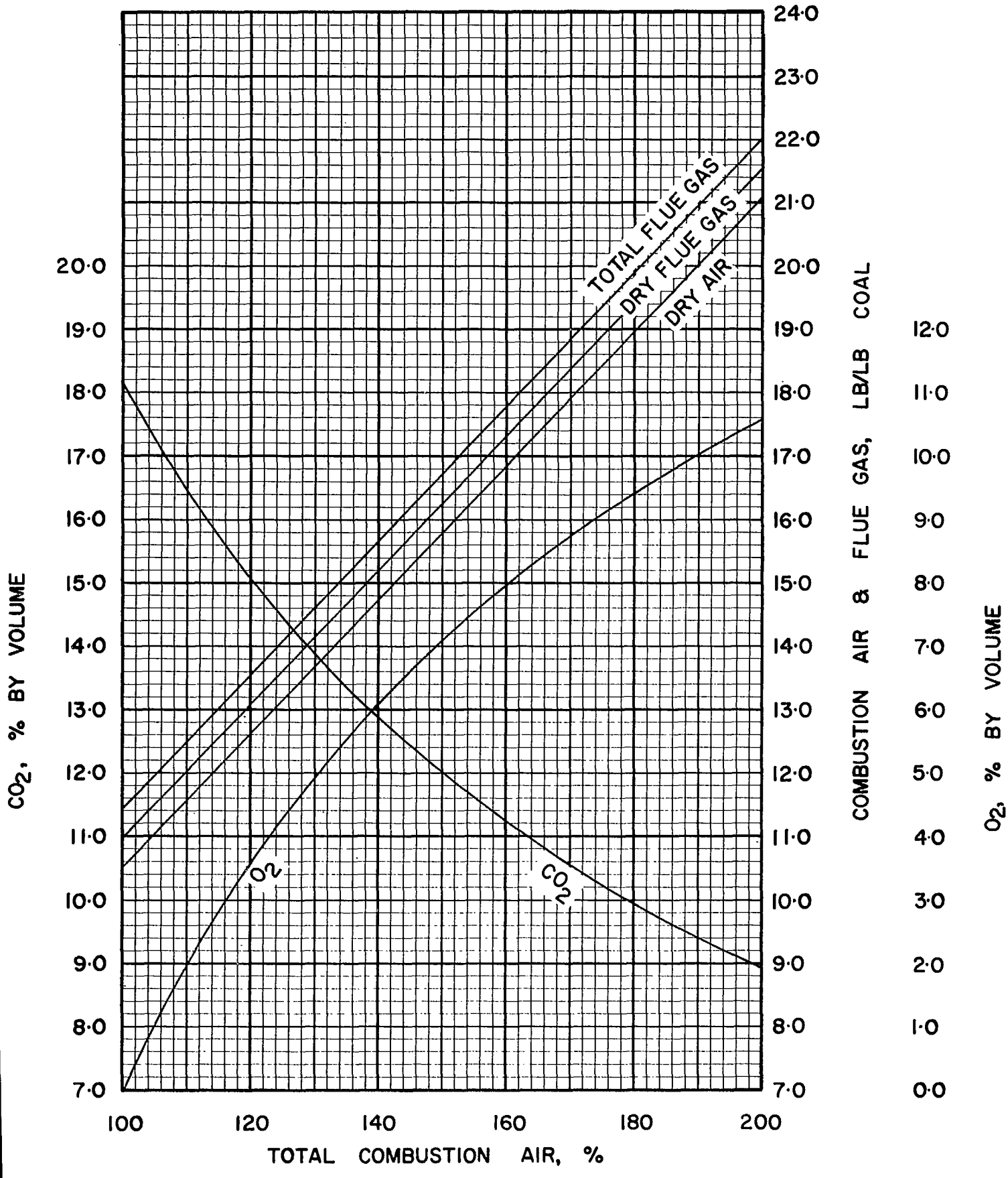

FIGURE 1· COMBUSTION DATA, WEIGHT BASIS US·WV·5

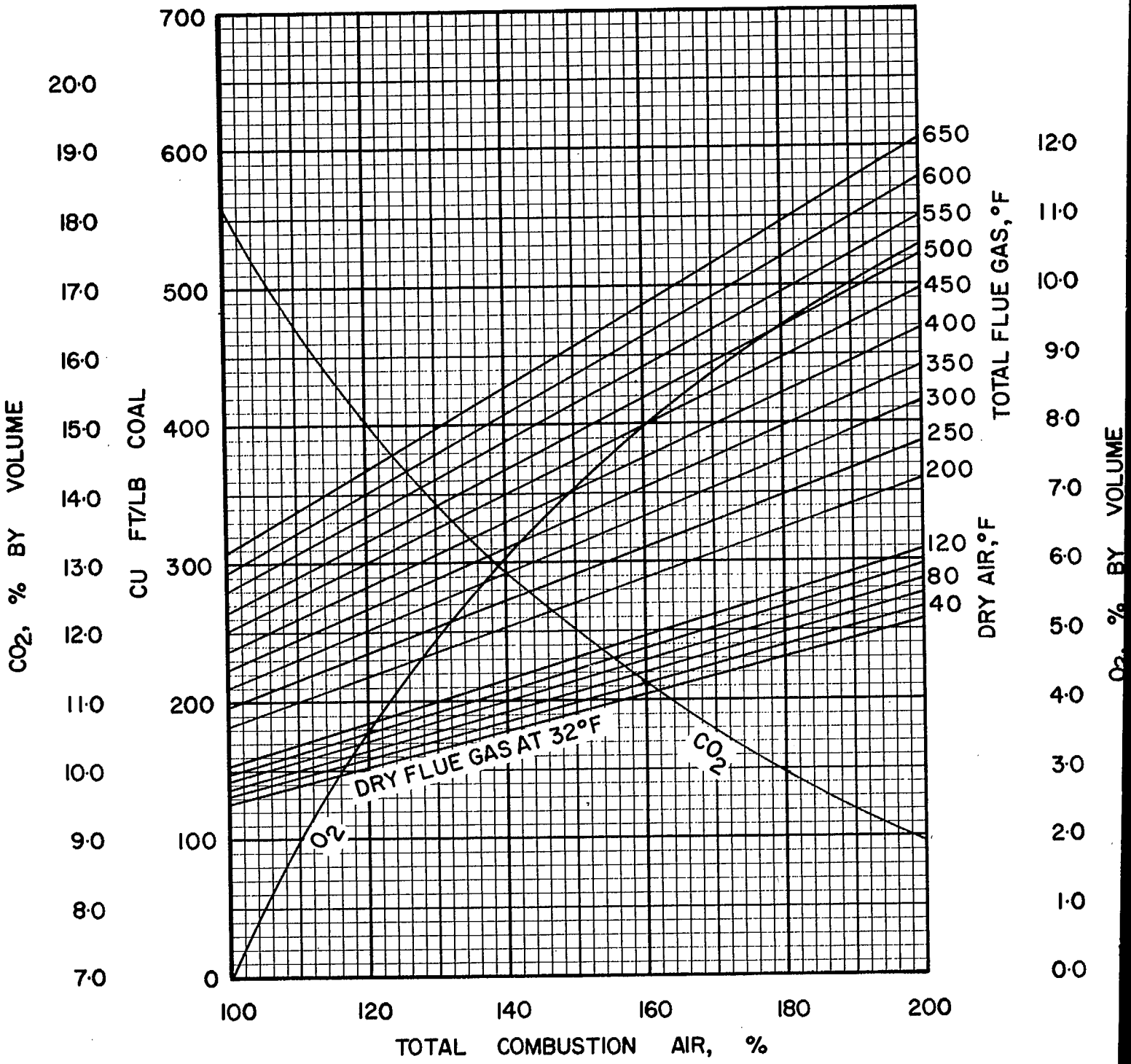

FIGURE 2· COMBUSTION DATA, VOLUME BASIS

US·WV·5

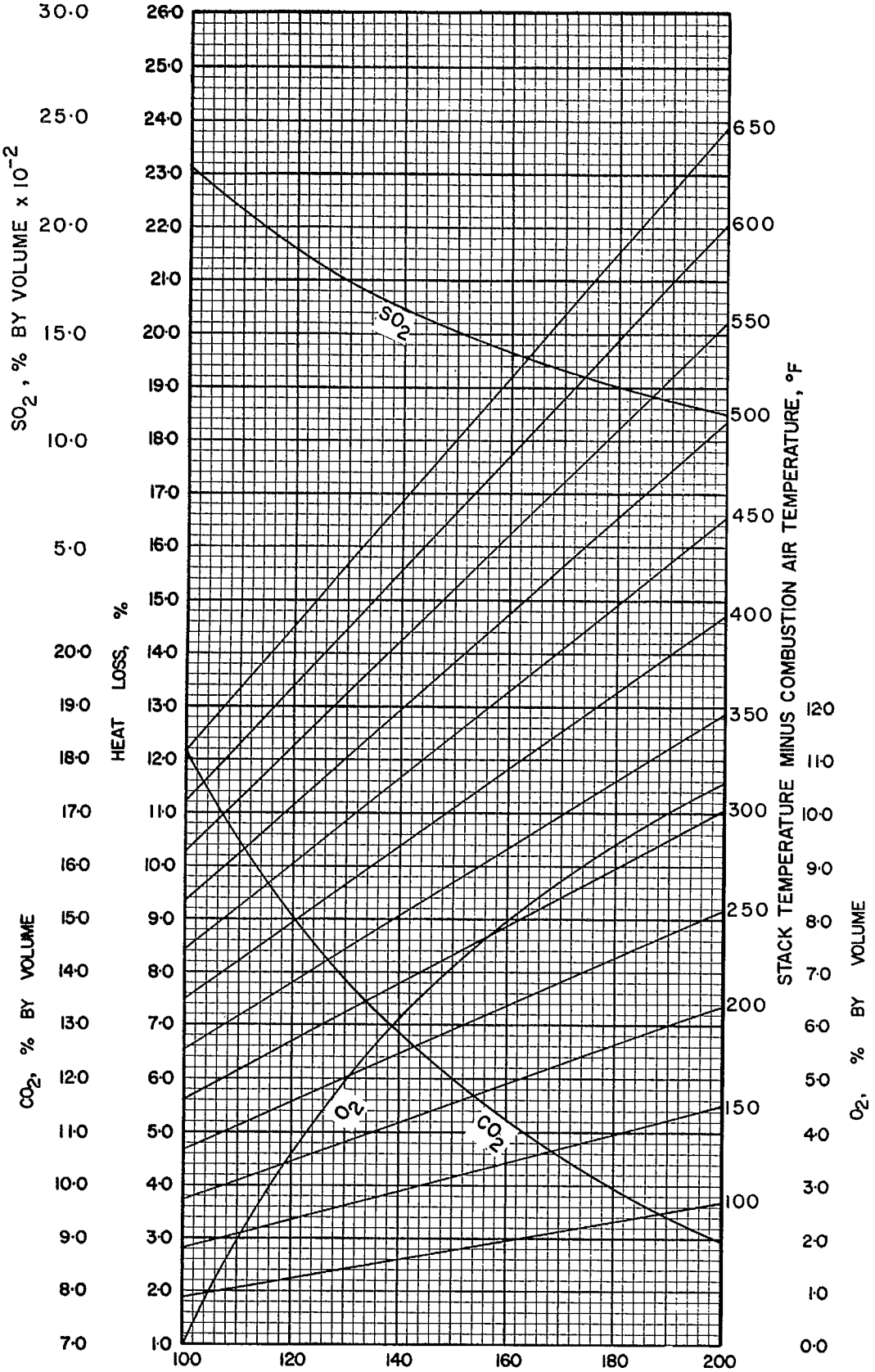

FIGURE 3· DRY FLUE GAS LOSS FOR A RANGE OF TEMPERATURE DIFFERENTIALS

US·WV·5

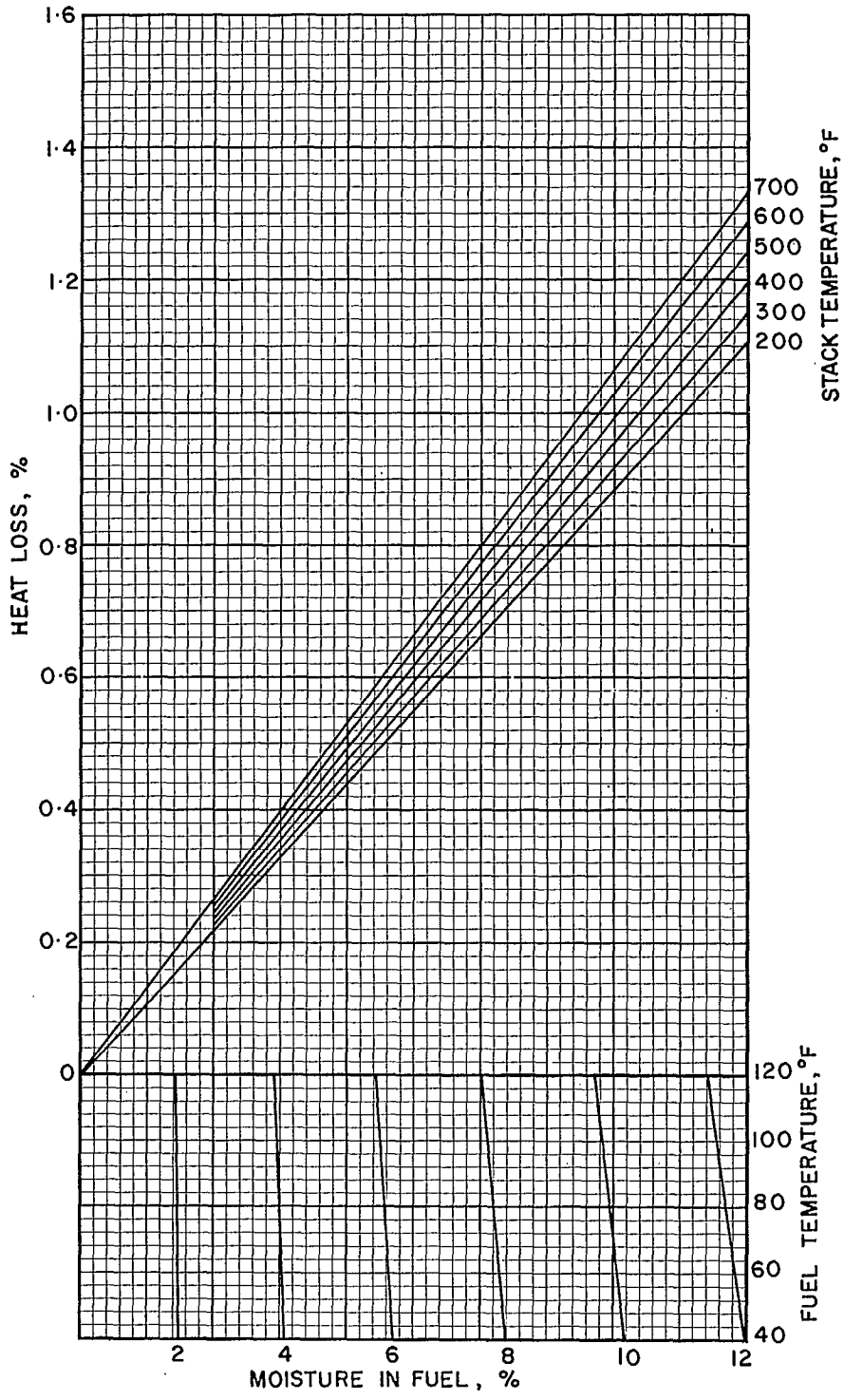

FIGURE 4· HEAT LOSS DUE TO MOISTURE IN COAL

US·WV·5

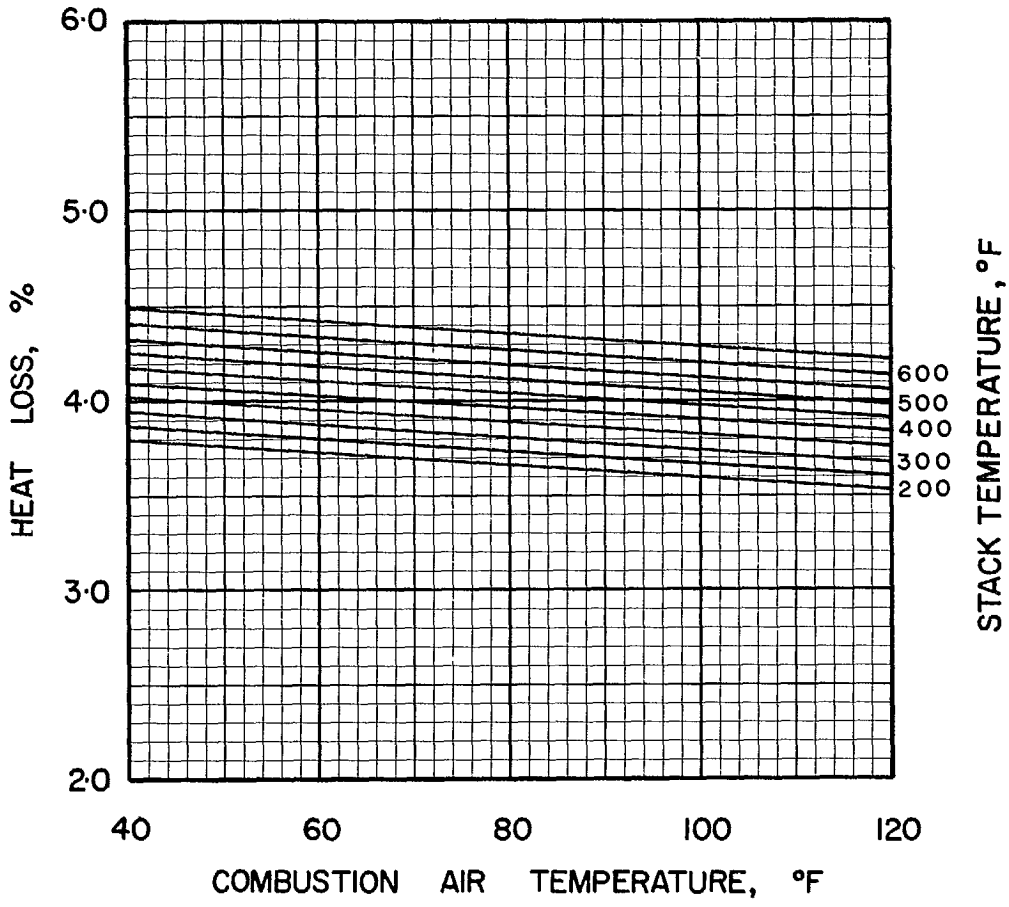

FIGURE 5· HYDROGEN LOSS FOR A RANGE OF STACK TEMPERATURES

US·WV·5

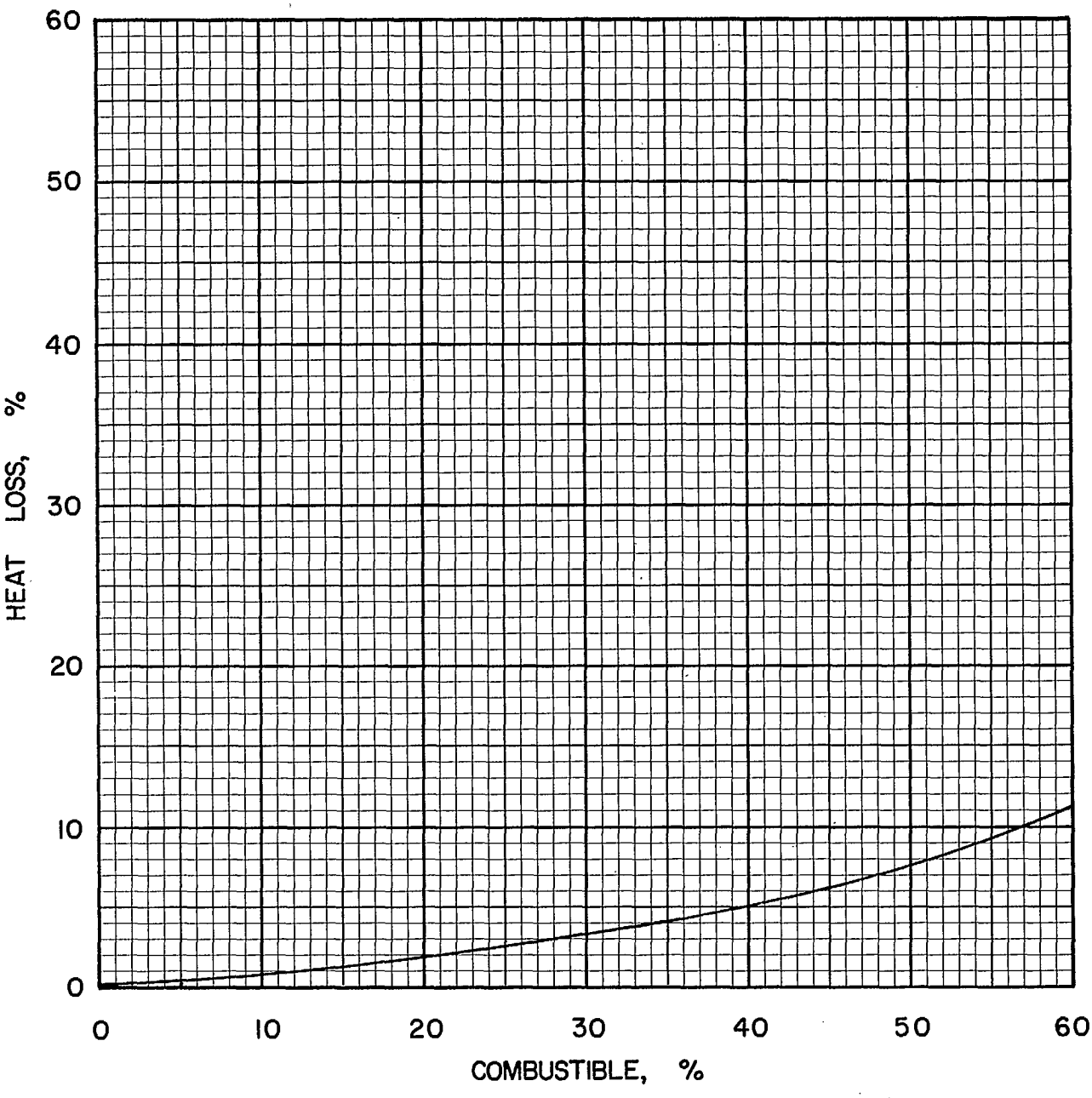

FIGURE 6 HEAT LOSS FOR A RANGE OF COMBUSTIBLE CONCENTRATIONS IN REFUSE

US·WV·5

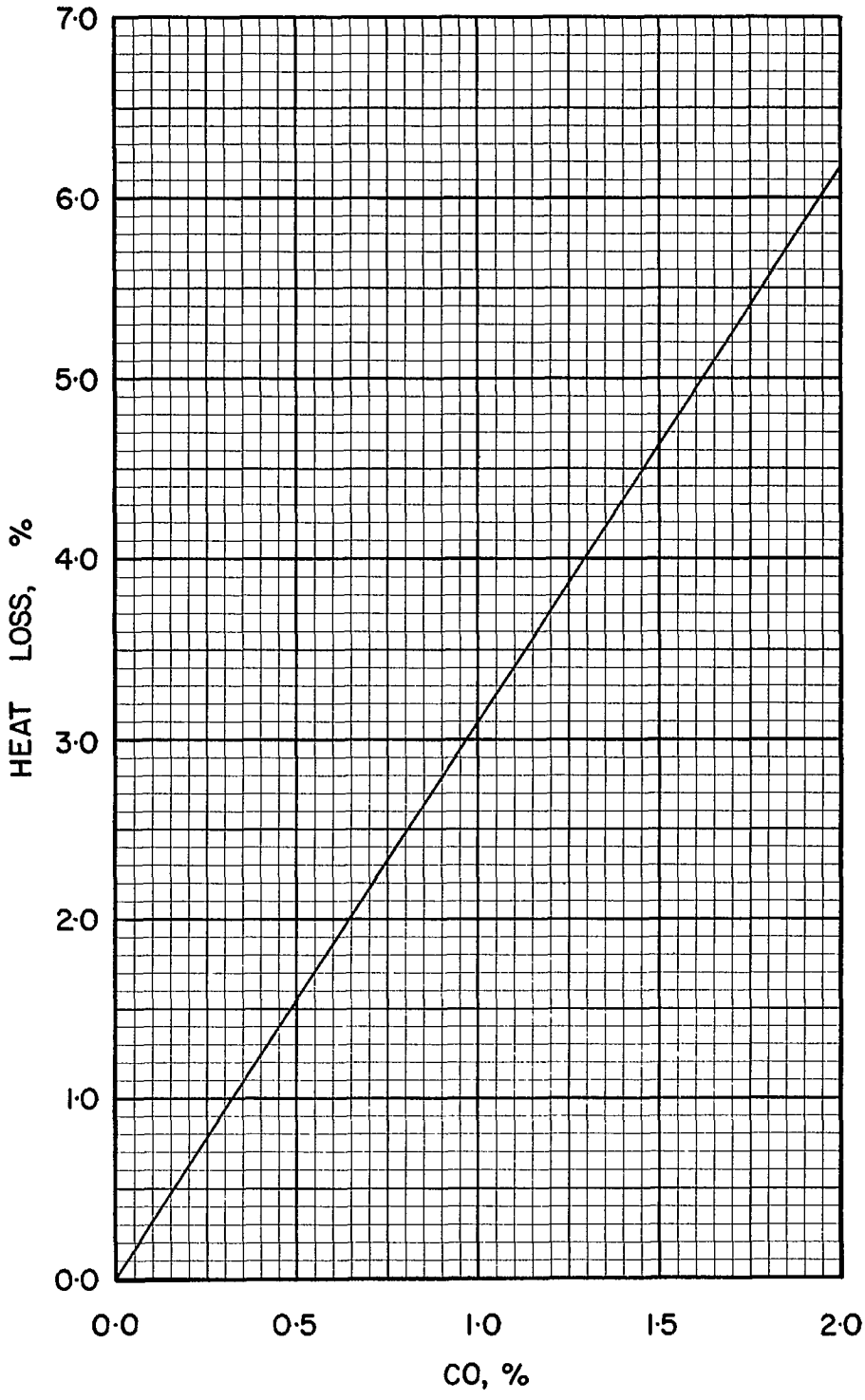

FIGURE 7 · HEAT LOSS FOR A RANGE OF CO CONCENTRATIONS, ASSUMING NEGLIGIBLE EXCESS AIR

US·WV·5

COAL US WV-6, OMAR, LOGAN COUNTY

Typical Moisture Range: 0–6%

Proximate Analysis (lb/lb dry coal)

Ash	0.050
Volatile Matter	0.370
Fixed Carbon	0.580
Total	1.000

Ultimate Analysis (lb/lb dry coal)

Carbon (C)	0.818
Hydrogen (H)	0.052
Sulphur (S)	0.008
Nitrogen (N)	0.015
Oxygen (O)	0.057
Ash	0.050
Total	1.000

Gross Calorific Value

Btu/lb:	14550
Btu/short ton:	29.10×10^6
Btu/long ton:	32.59×10^6
MJ/kg:	33.84

Conversion Factors

1 short ton = 0.8929 long tons = 2000 lb
10^6 Btu = 68.73 lb
10^6 Btu = 0.03436 short tons
10^6 Btu = 0.03068 long tons

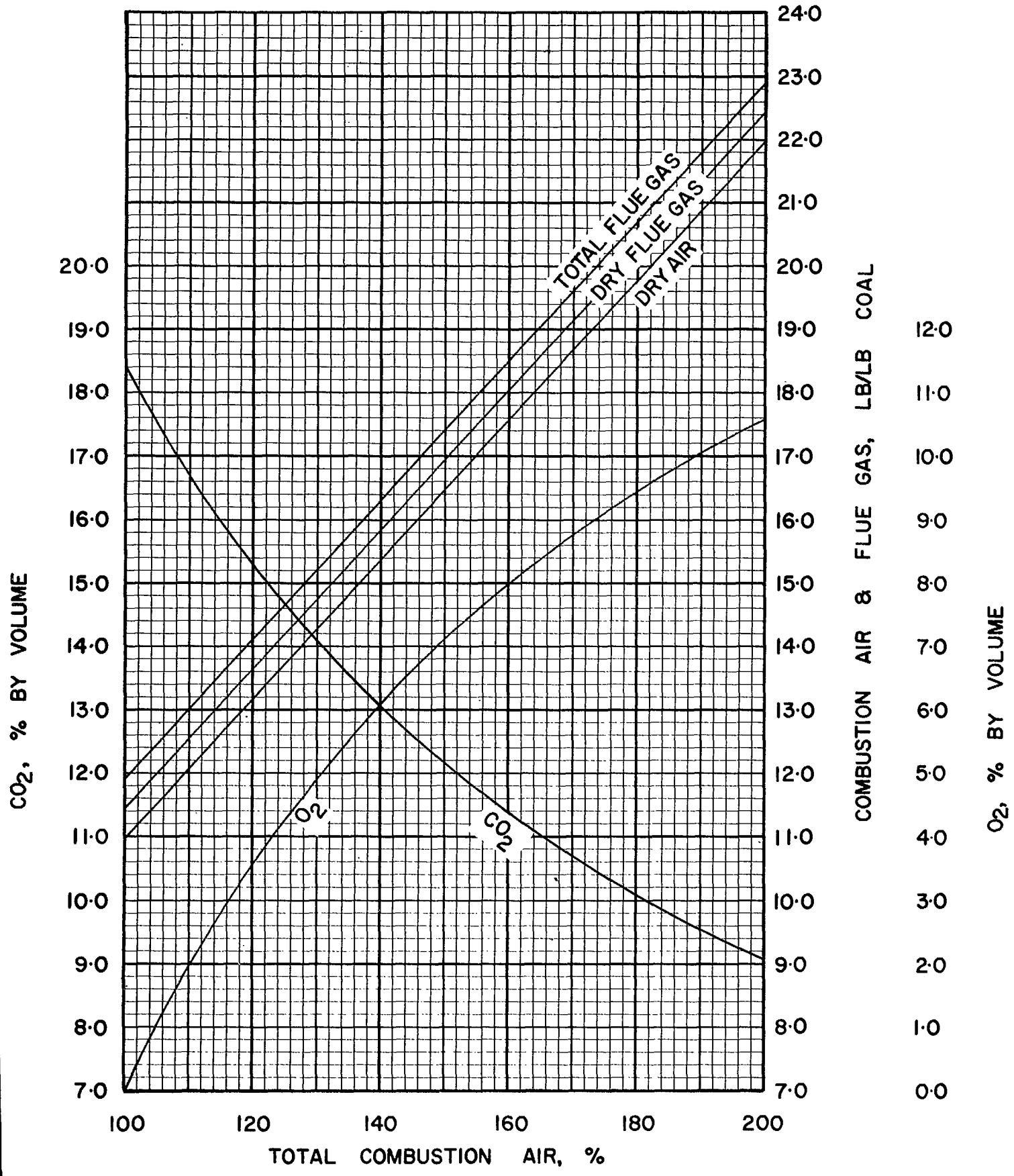

FIGURE 1· COMBUSTION DATA, WEIGHT BASIS

US·WV·6

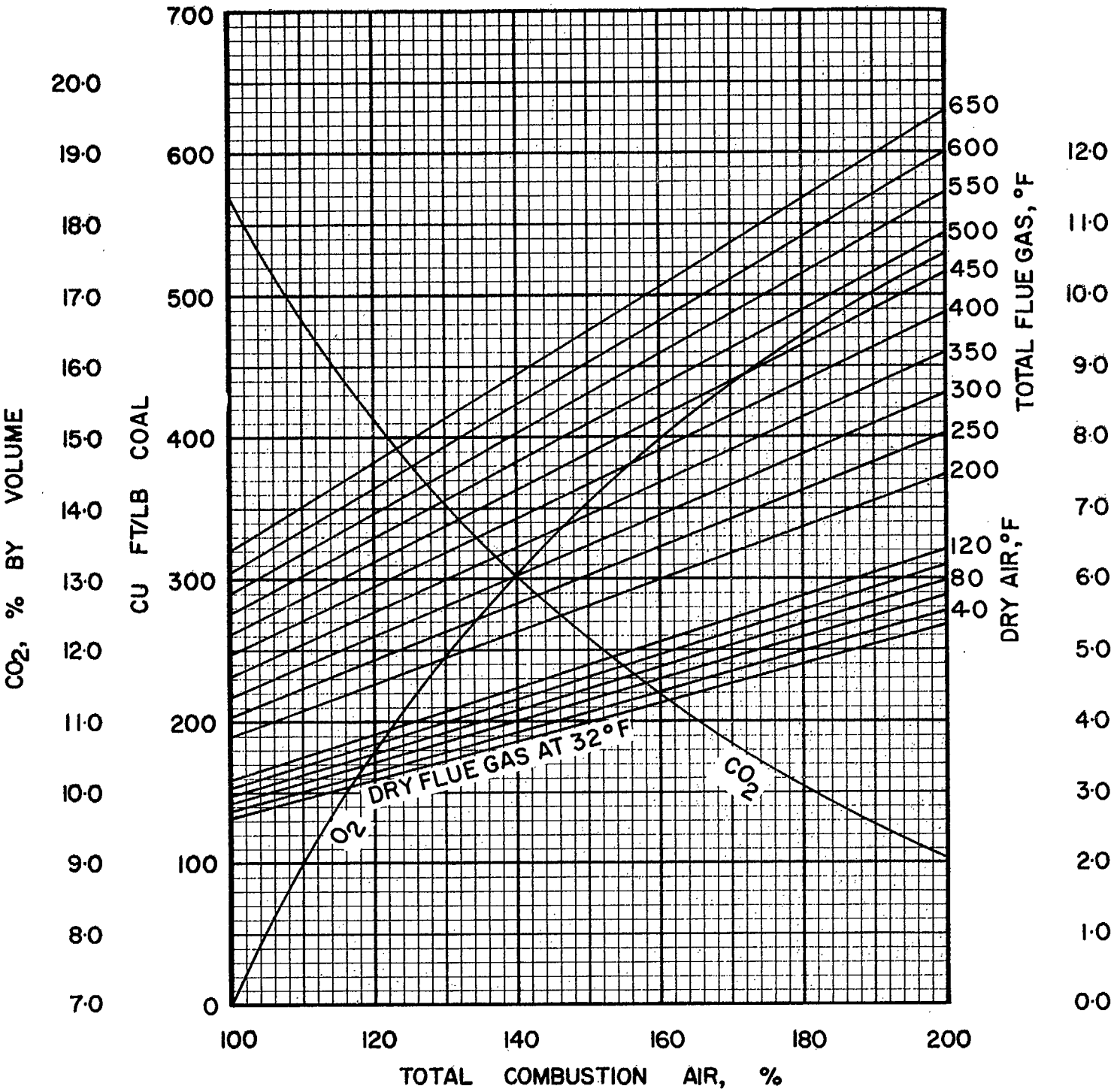

FIGURE 2· COMBUSTION DATA, VOLUME BASIS

US·WV·6

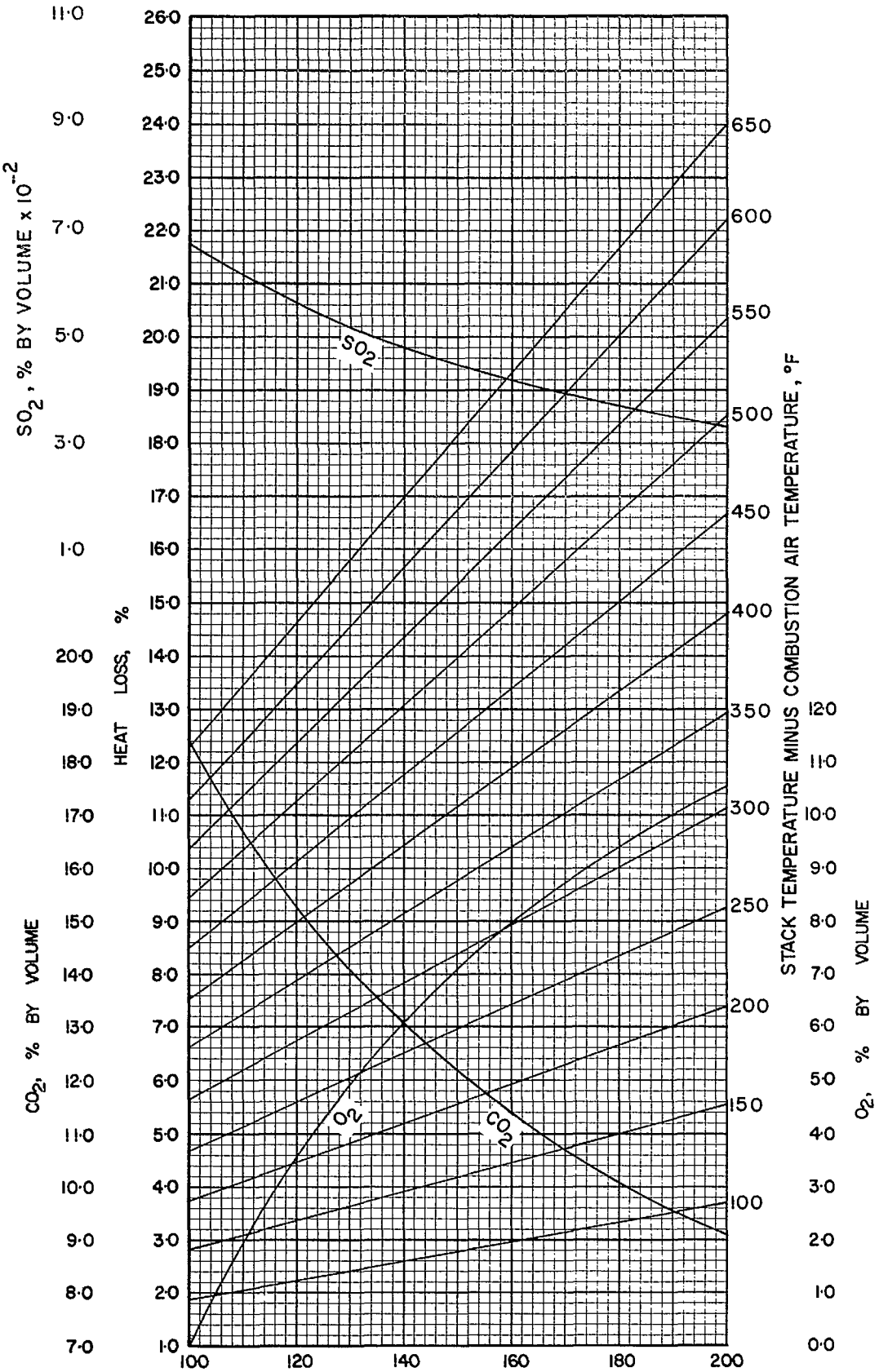

FIGURE 3· DRY FLUE GAS LOSS FOR A RANGE OF TEMPERATURE DIFFERENTIALS

US·WV·6

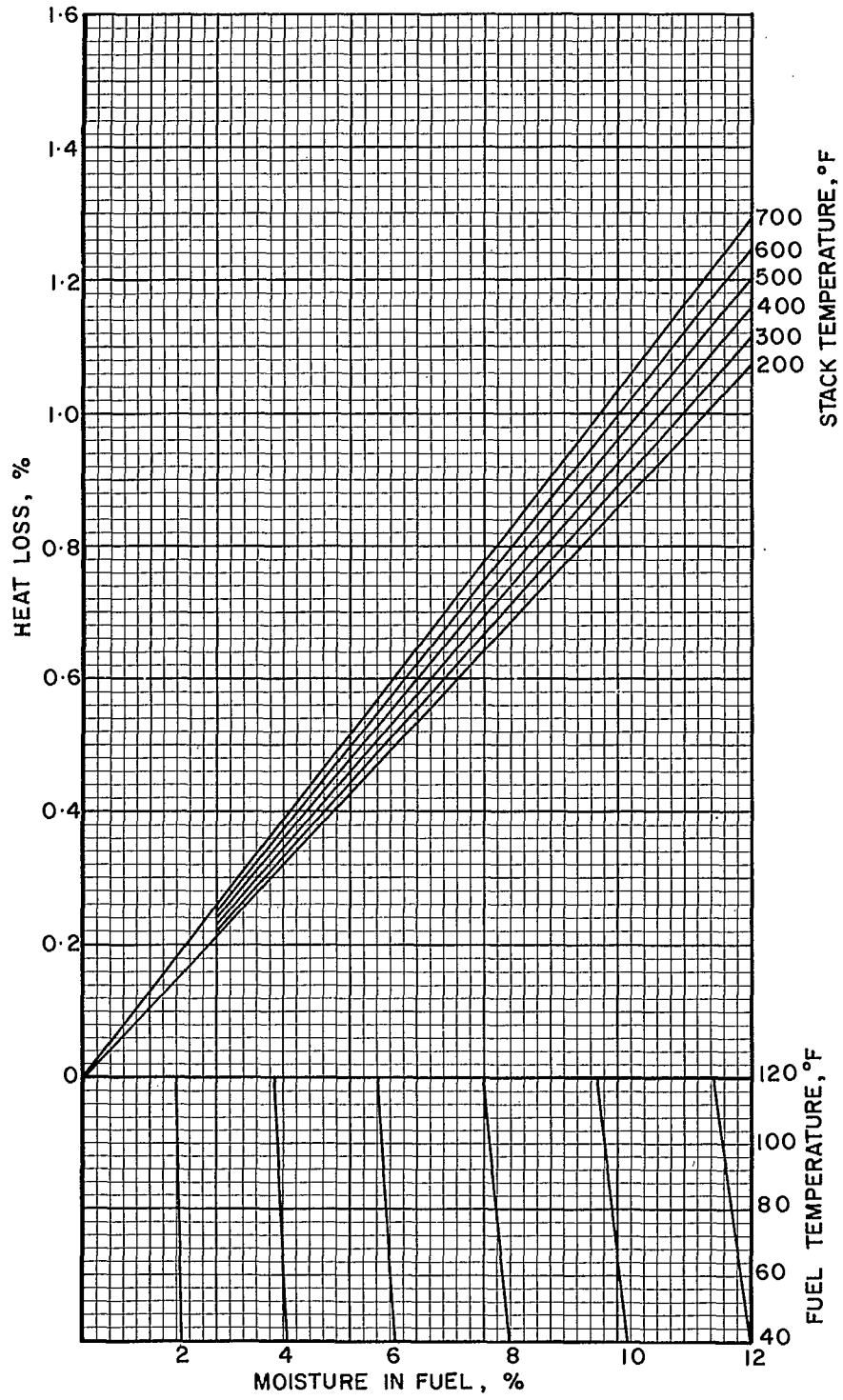

FIGURE 4· HEAT LOSS DUE TO MOISTURE IN COAL

US·WV·6

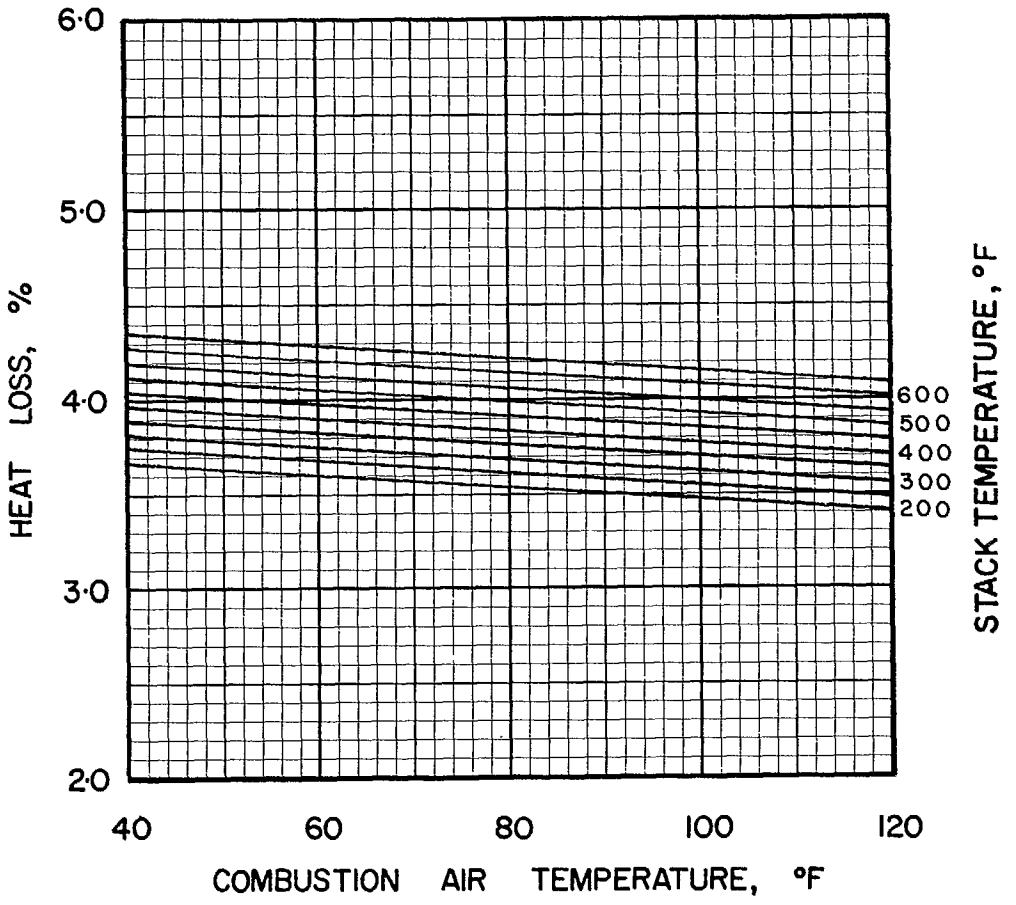

FIGURE 5· HYDROGEN LOSS FOR A RANGE OF STACK TEMPERATURES

US·WV·6

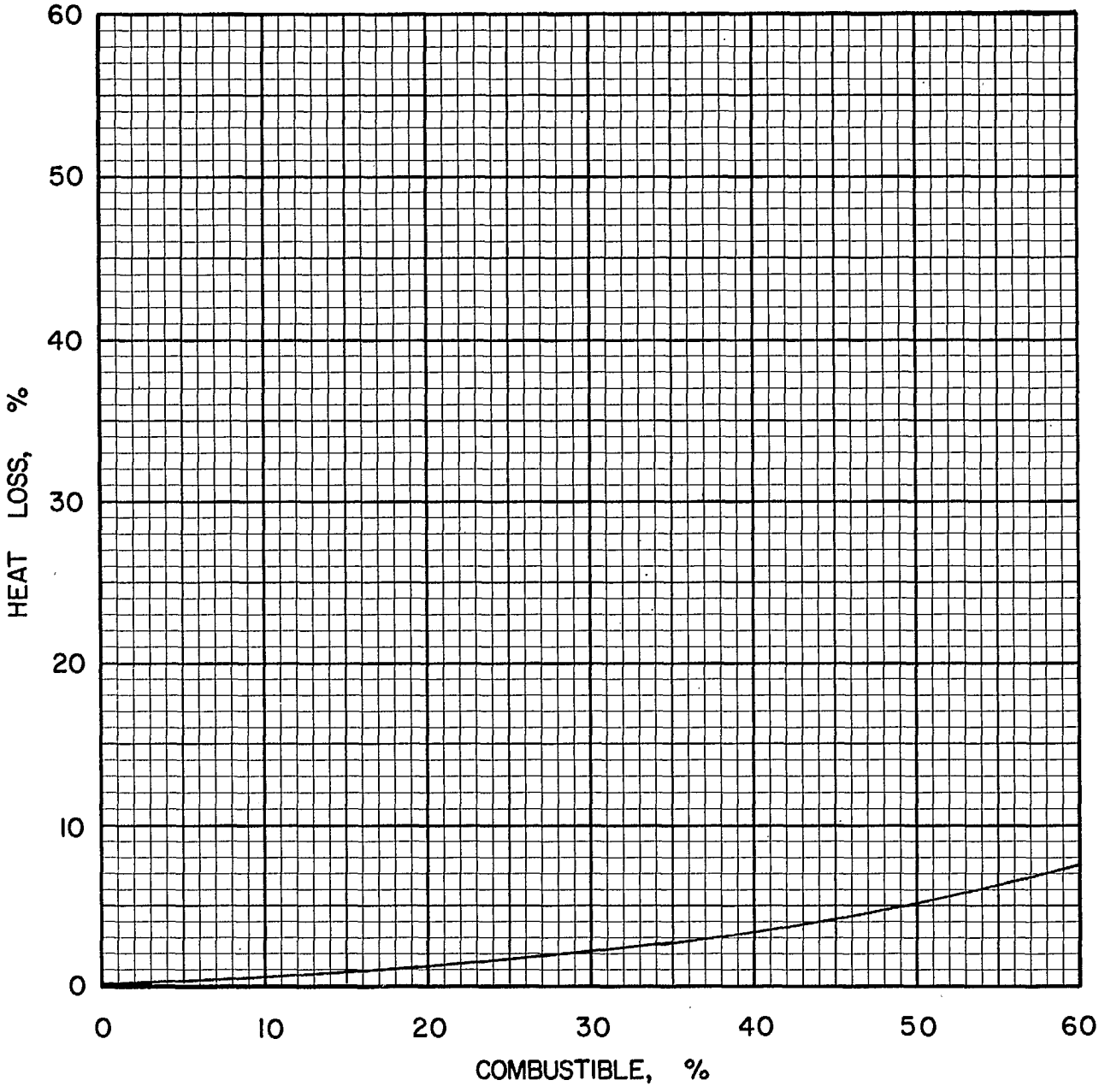

FIGURE 6 HEAT LOSS FOR A RANGE OF COMBUSTIBLE CONCENTRATIONS IN REFUSE

US·WV·6

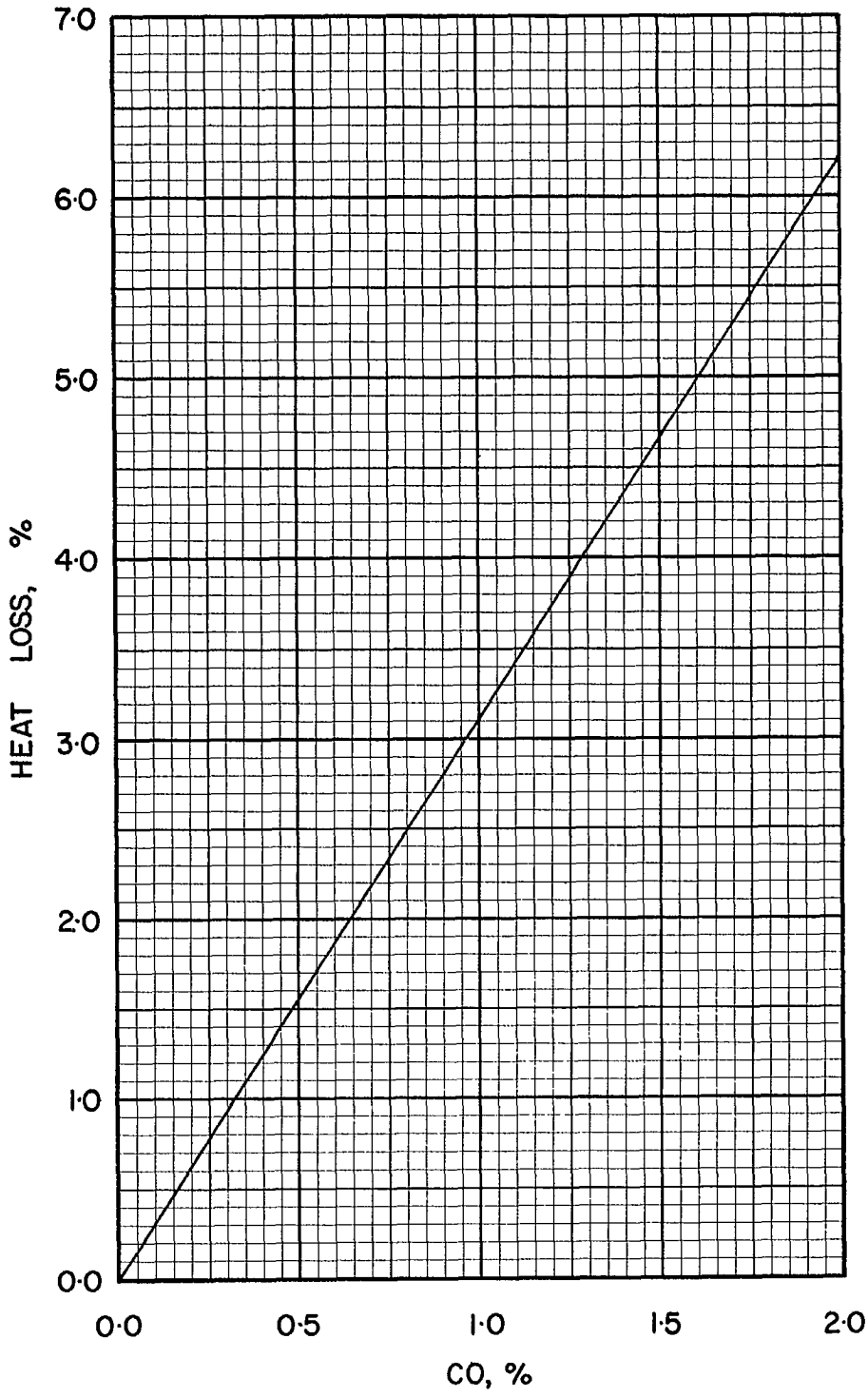

FIGURE 7 · HEAT LOSS FOR A RANGE OF CO CONCENTRATIONS, ASSUMING NEGLIGIBLE EXCESS AIR

US·WV·6

COAL US WV-7, PEERLESS EAGLE, A.T. MASSEY

Typical Moisture Range: 0–6%

Proximate Analysis (lb/lb dry coal)

Ash	0.091
Volatile Matter	0.327
Fixed Carbon	0.582
Total	1.000

Ultimate Analysis (lb/lb dry coal)

Carbon (C)	0.797
Hydrogen (H)	0.048
Sulphur (S)	0.008
Nitrogen (N)	0.014
Oxygen (O)	0.042
Ash	0.091
Total	1.000

Gross Calorific Value

Btu/lb:	13889
Btu/short ton:	27.78×10^6
Btu/long ton:	31.11×10^6
MJ/kg:	32.30

Conversion Factors

1 short ton = 0.8929 long tons = 2000 lb
10^6 Btu = 72.00 lb
10^6 Btu = 0.03600 short tons
10^6 Btu = 0.03214 long tons

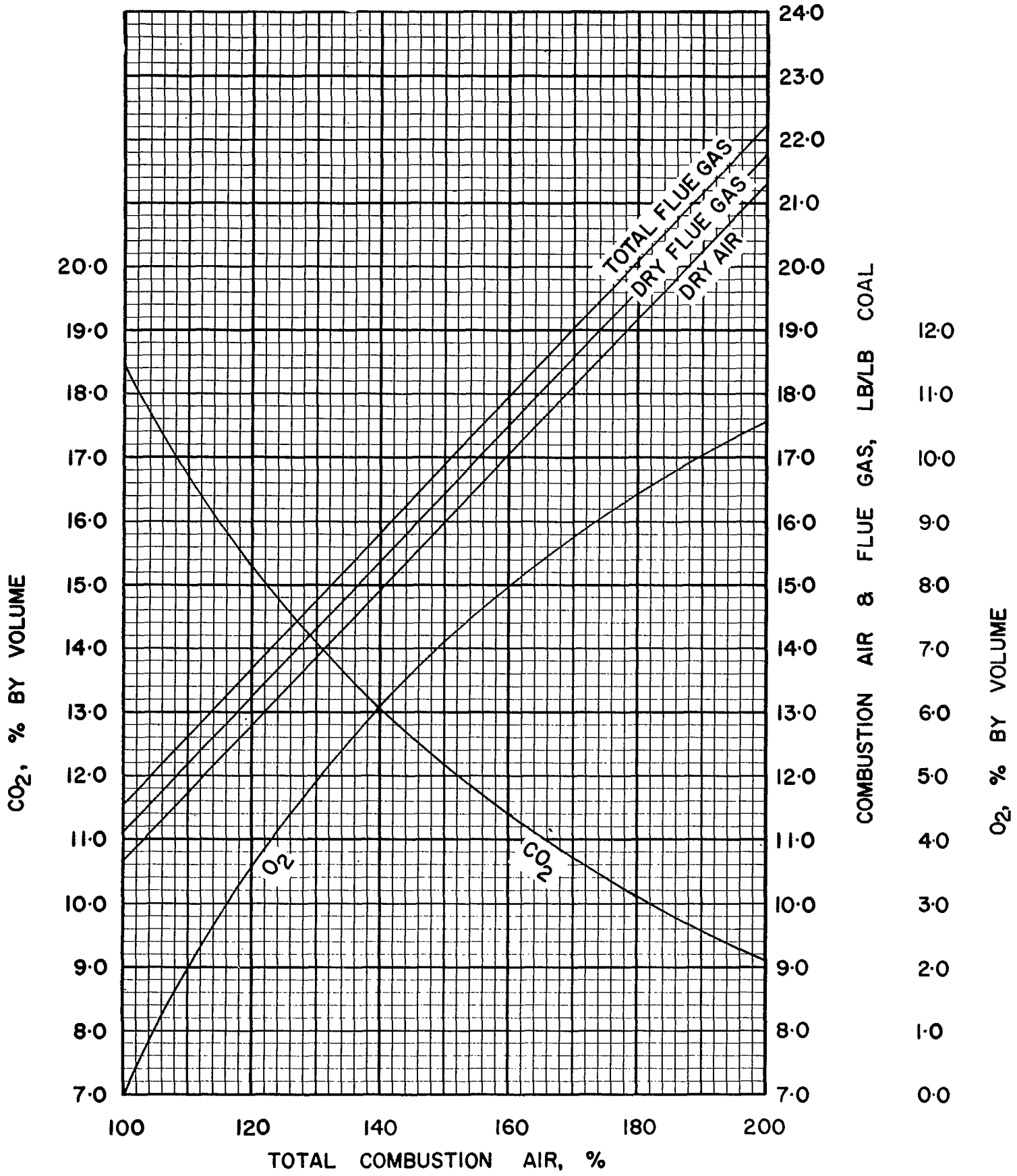

FIGURE 1· COMBUSTION DATA, WEIGHT BASIS US·WV·7

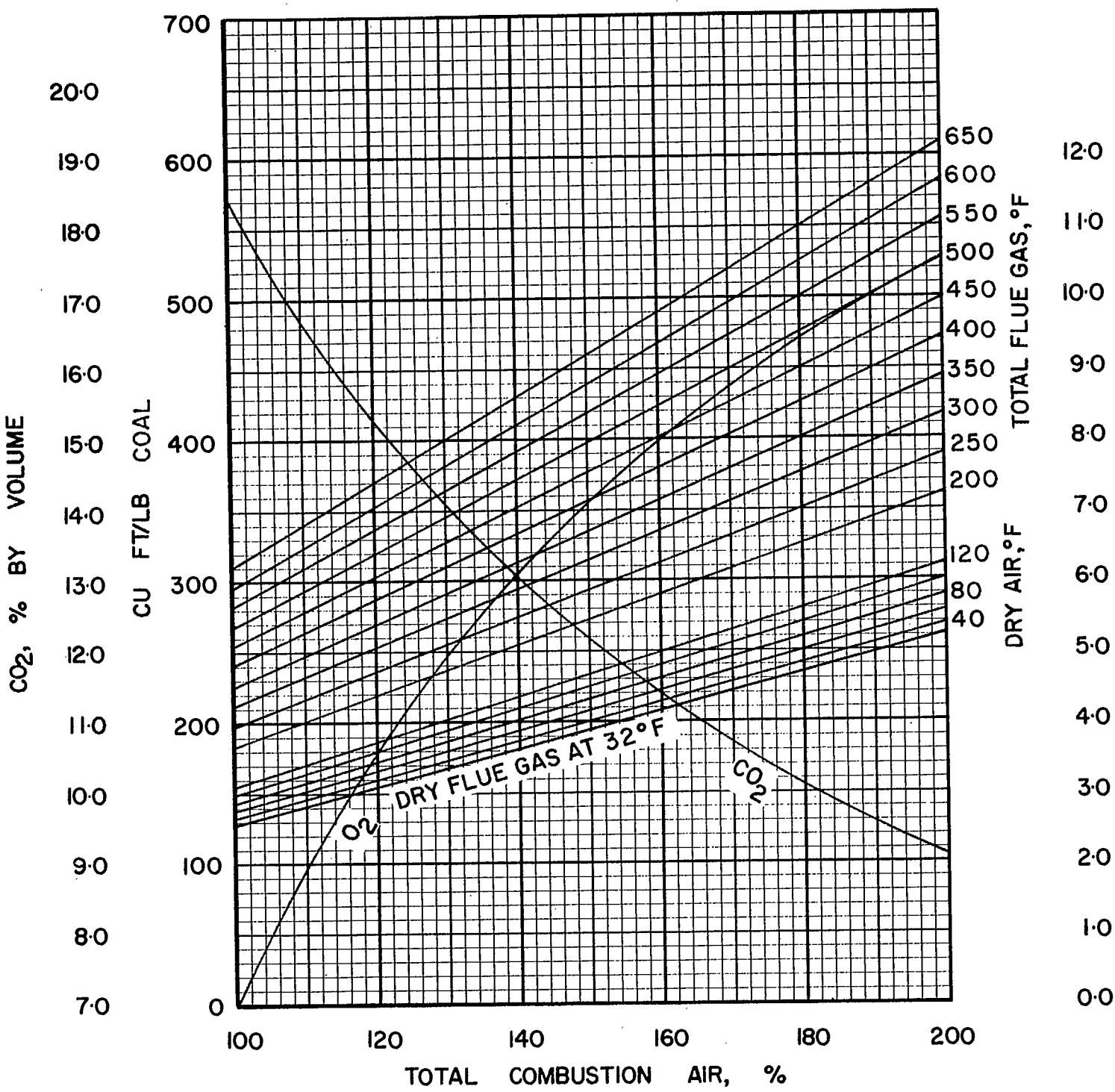

FIGURE 2· COMBUSTION DATA, VOLUME BASIS

US·WV·7

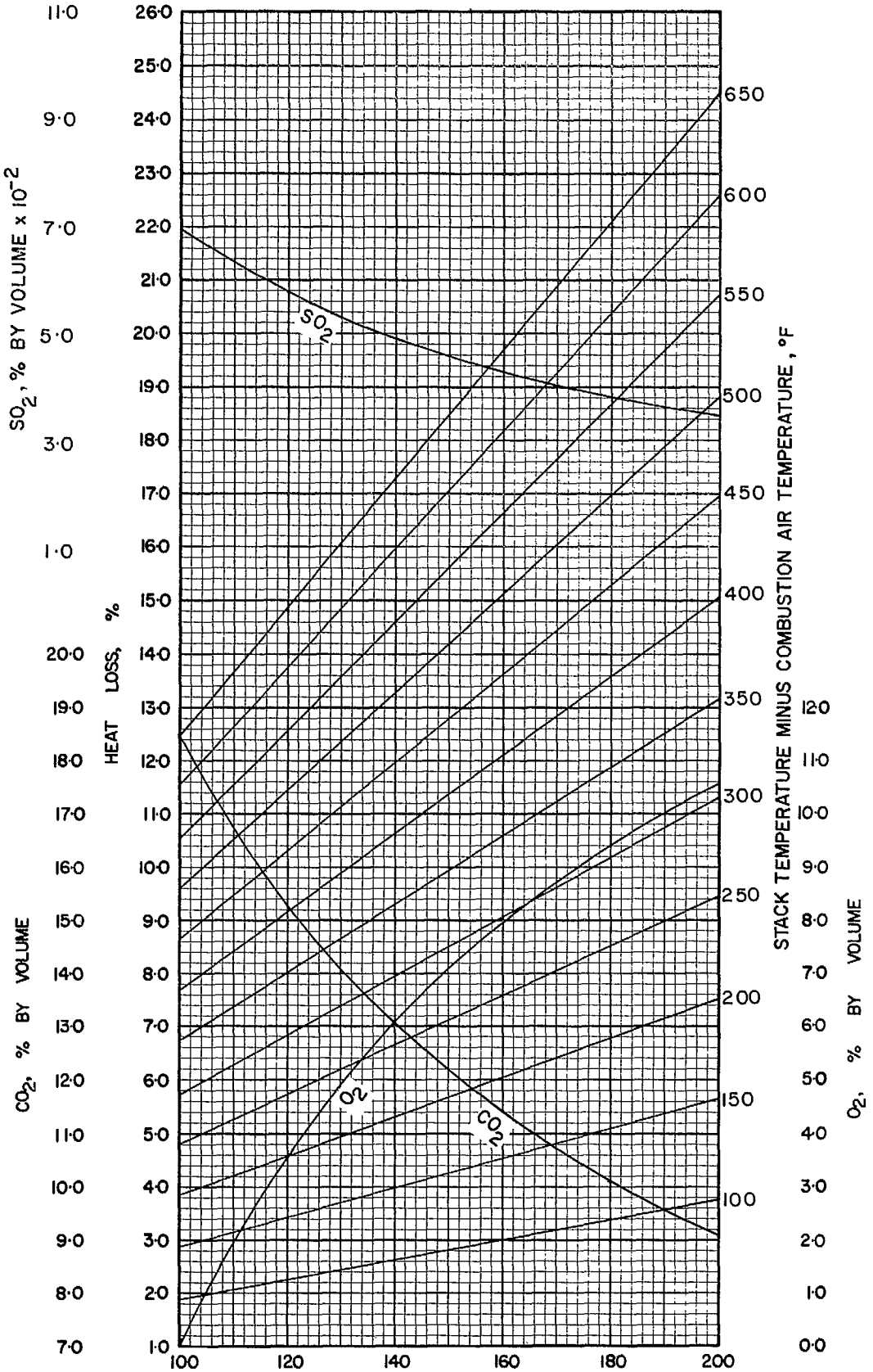

FIGURE 3· DRY FLUE GAS LOSS FOR A RANGE OF TEMPERATURE DIFFERENTIALS

US·WV·7

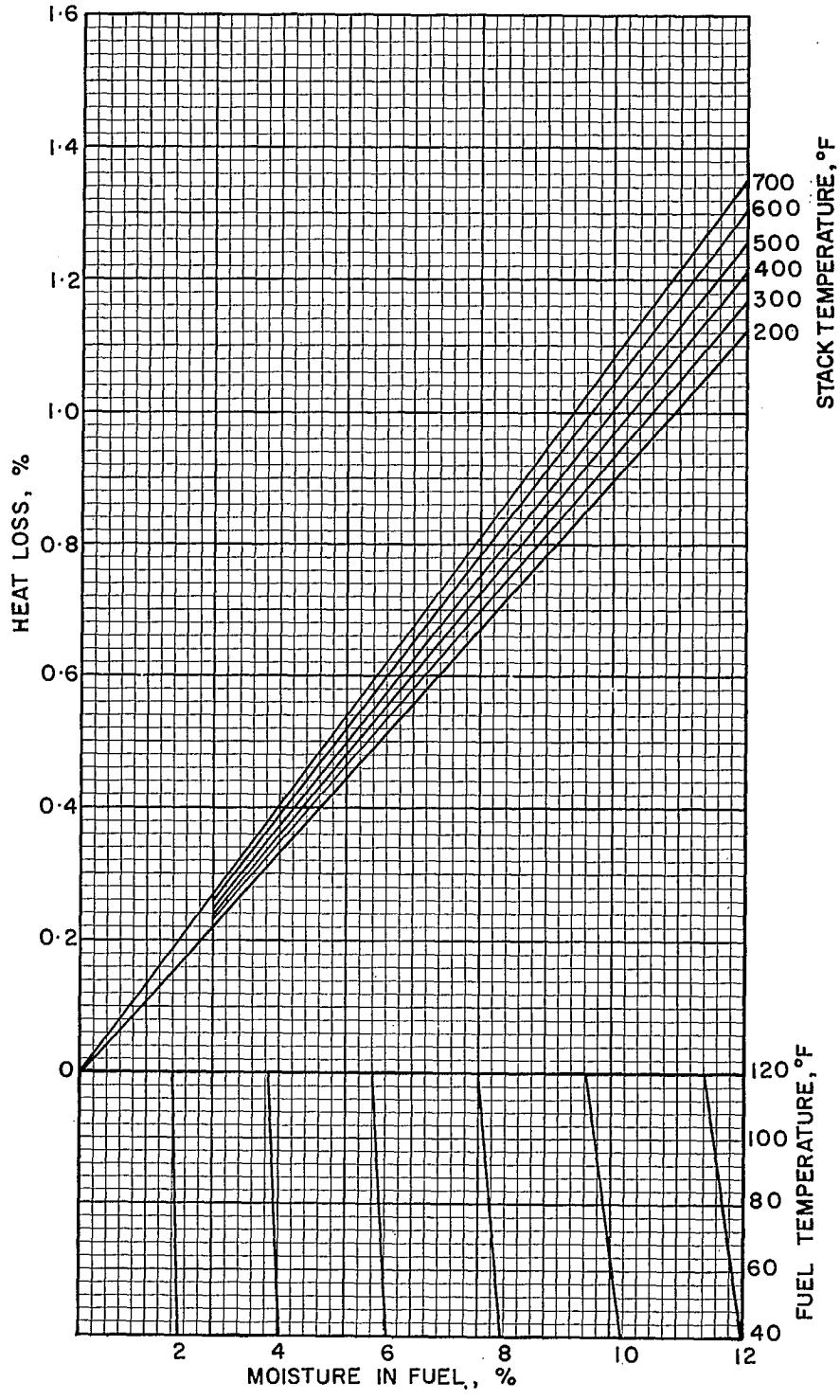

FIGURE 4 · HEAT LOSS DUE TO MOISTURE IN COAL

US·WV·7

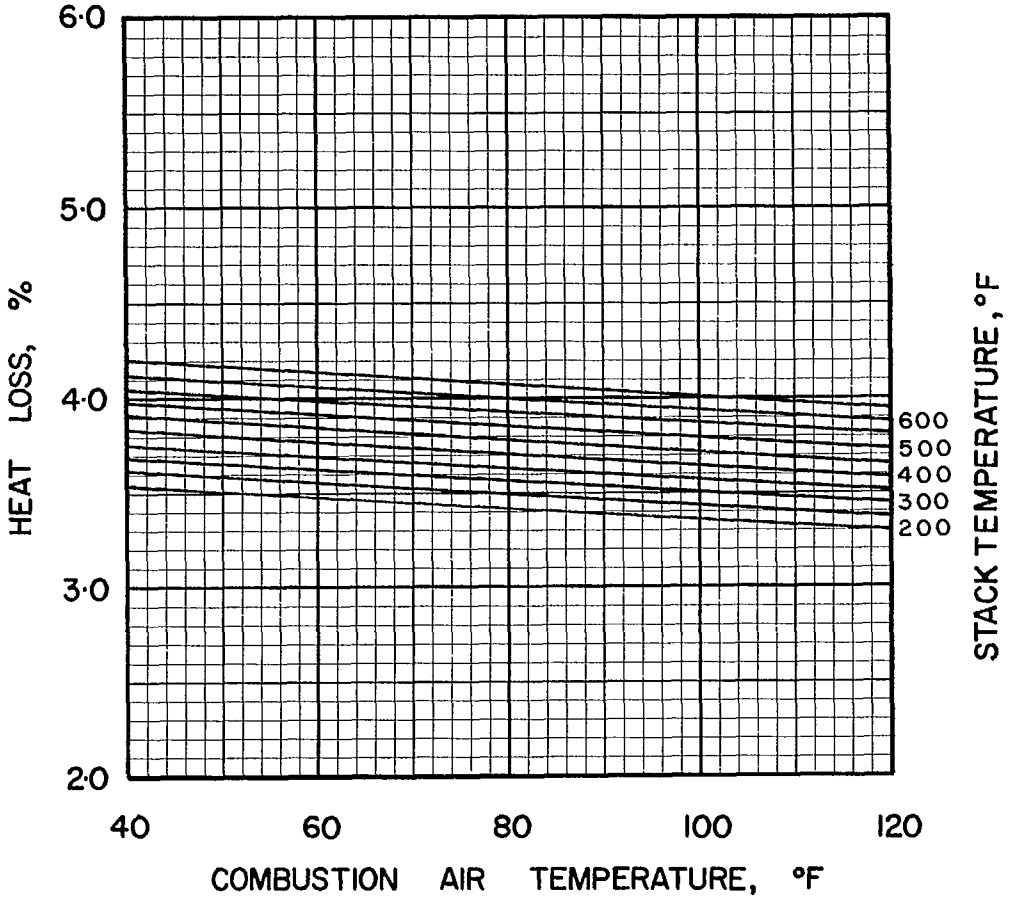

FIGURE 5· HYDROGEN LOSS FOR A RANGE OF STACK TEMPERATURES

US·WV·7

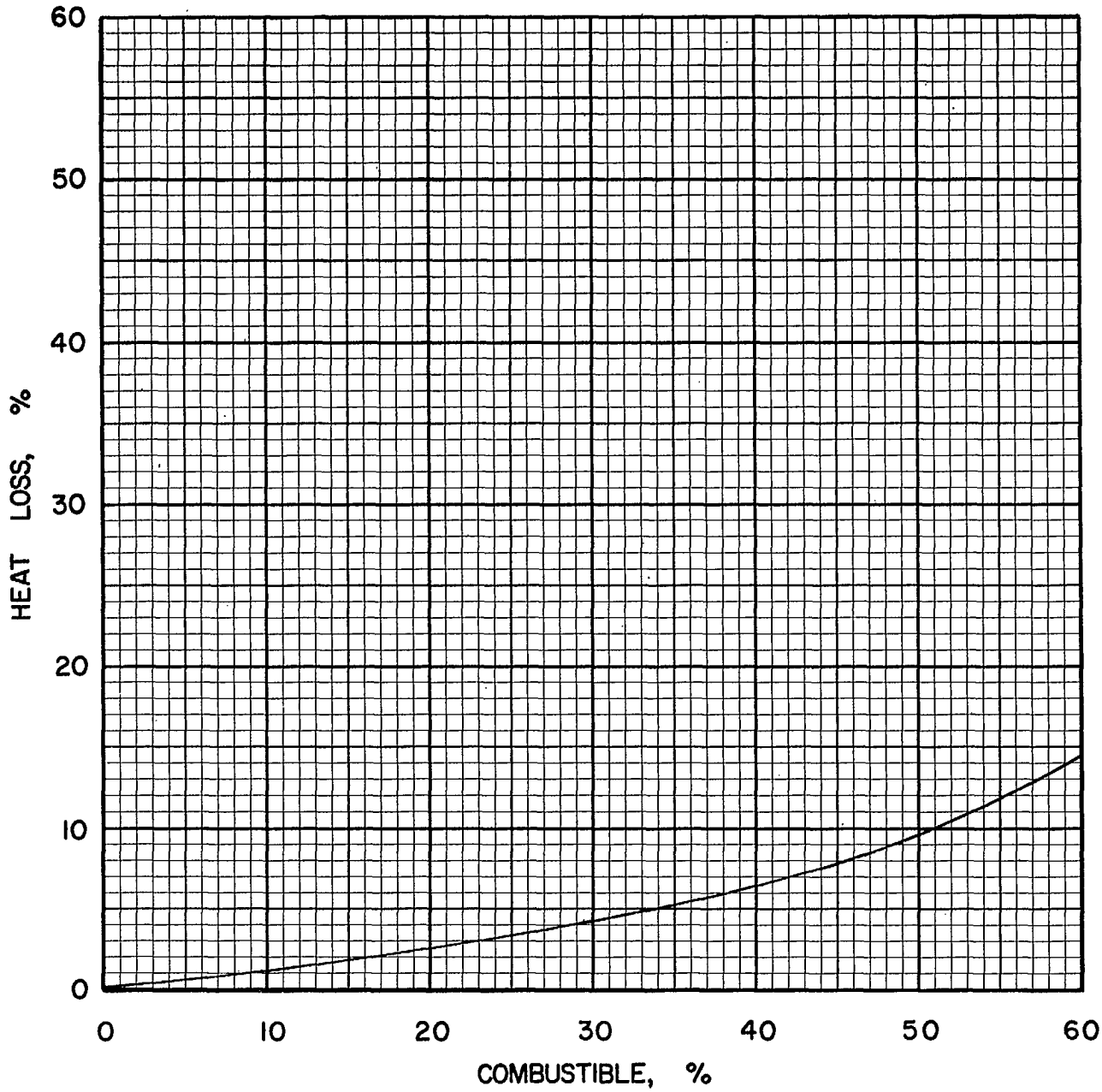

FIGURE 6 HEAT LOSS FOR A RANGE OF COMBUSTIBLE CONCENTRATIONS IN REFUSE

US·WV·7

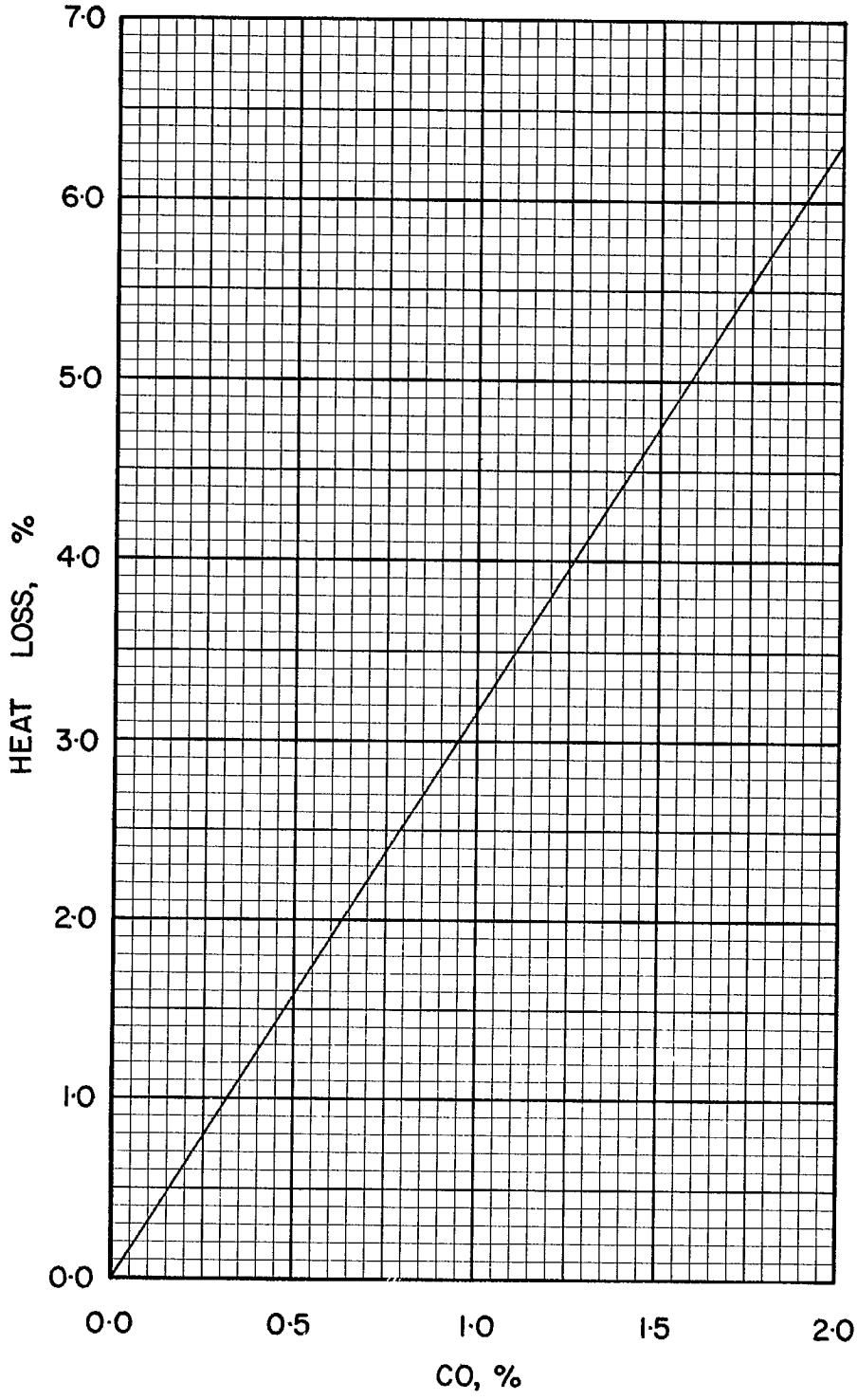

FIGURE 7 · HEAT LOSS FOR A RANGE OF CO CONCENTRATIONS, ASSUMING NEGLIGIBLE EXCESS AIR

US·WV·7

COAL US WV-8, POND FORK

Typical Moisture Range: 0–6%

Proximate Analysis (lb/lb dry coal)

Ash	0.075
Volatile Matter	0.353
Fixed Carbon	0.572
Total	1.000

Ultimate Analysis (lb/lb dry coal)

Carbon (C)	0.783
Hydrogen (H)	0.051
Sulphur (S)	0.008
Nitrogen (N)	0.015
Oxygen (O)	0.068
Ash	0.075
Total	1.000

Gross Calorific Value

Btu/lb:	13850
Btu/short ton:	27.70×10^6
Btu/long ton:	31.02×10^6
MJ/kg:	32.21

Conversion Factors

1 short ton = 0.8929 long tons = 2000 lb
10^6 Btu = 72.20 lb
10^6 Btu = 0.03610 short tons
10^6 Btu = 0.03223 long tons

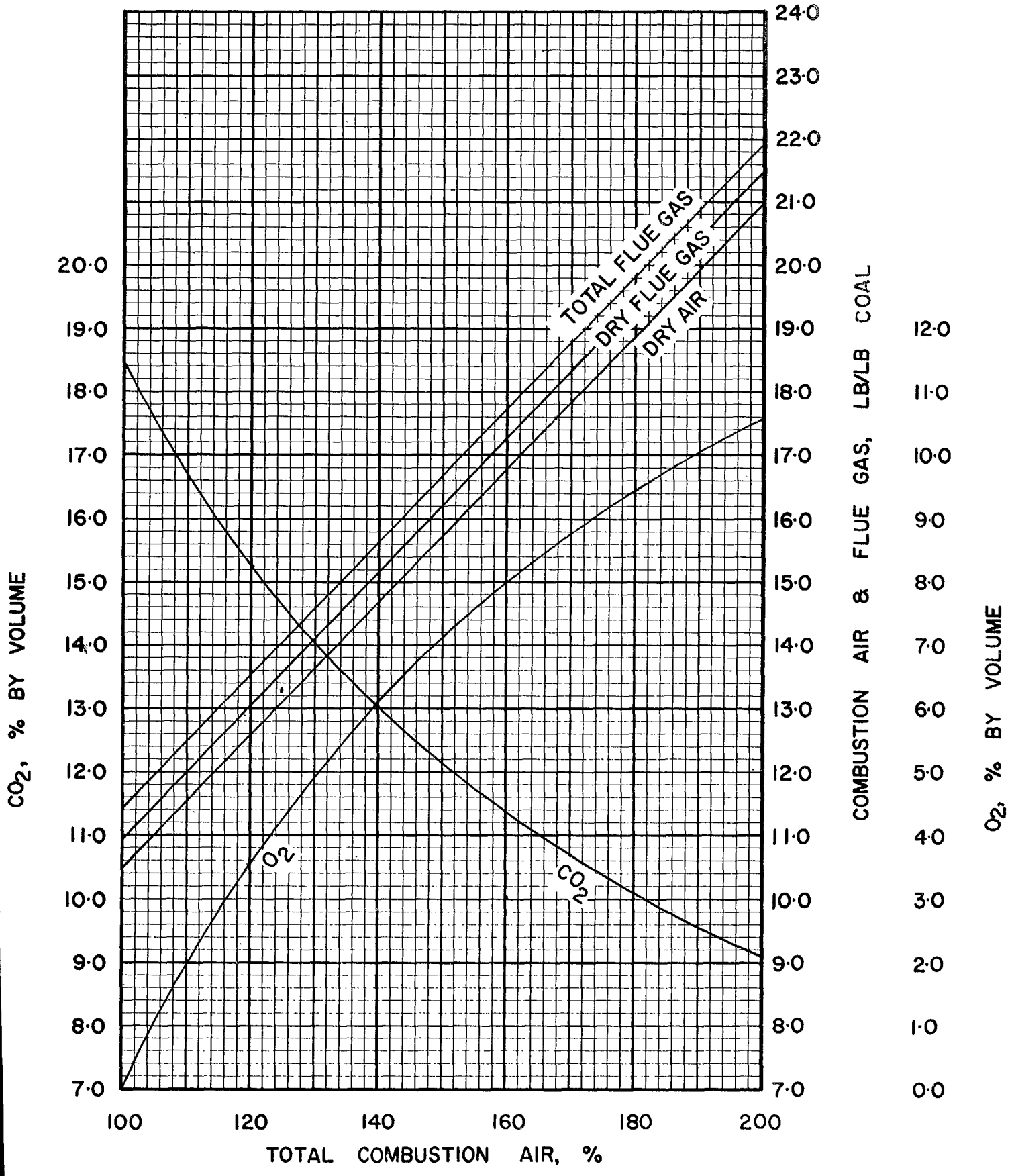

FIGURE 1· COMBUSTION DATA, WEIGHT BASIS

US·WV·8

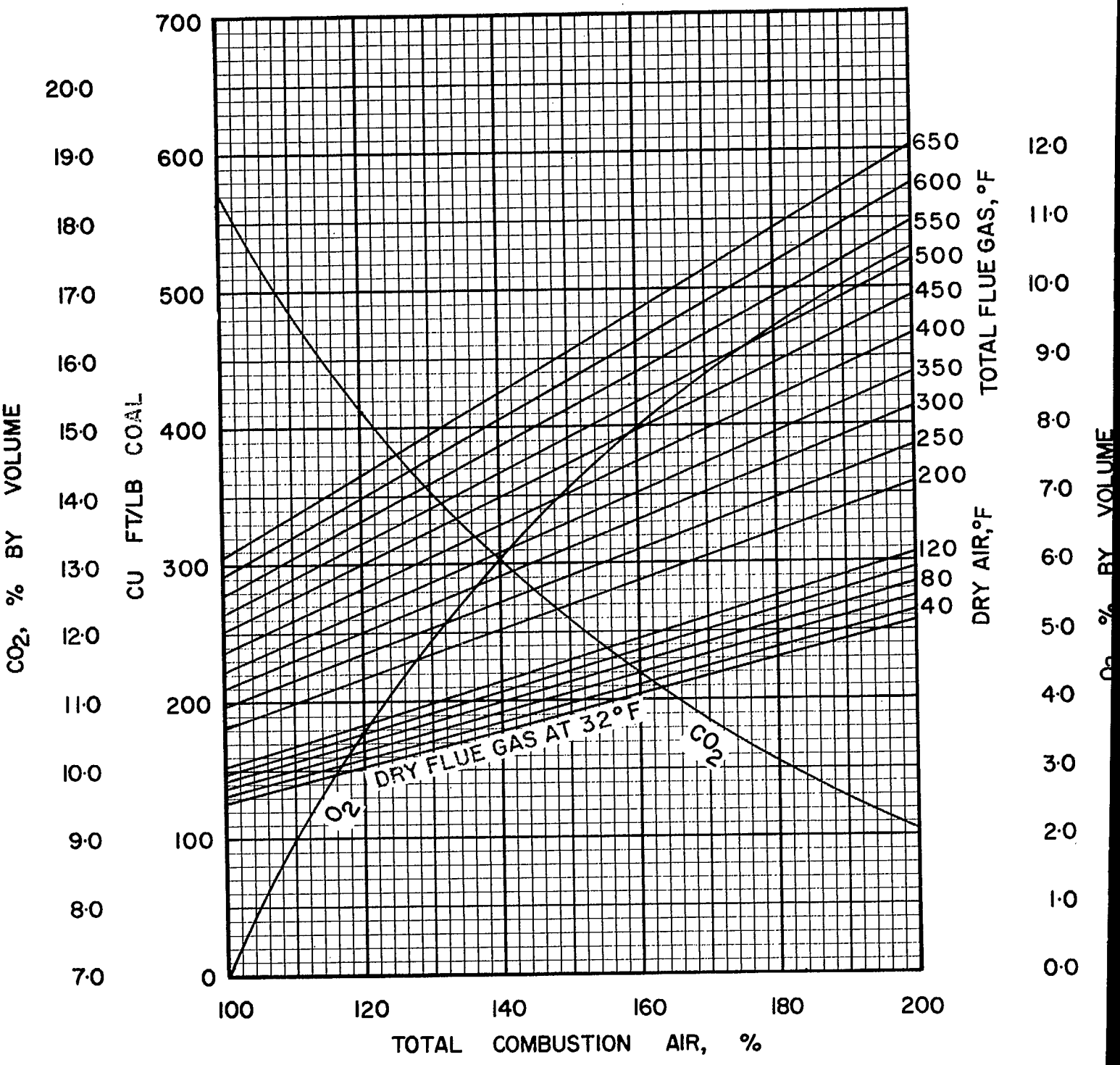

FIGURE 2 · COMBUSTION DATA, VOLUME BASIS

US · WV · 8

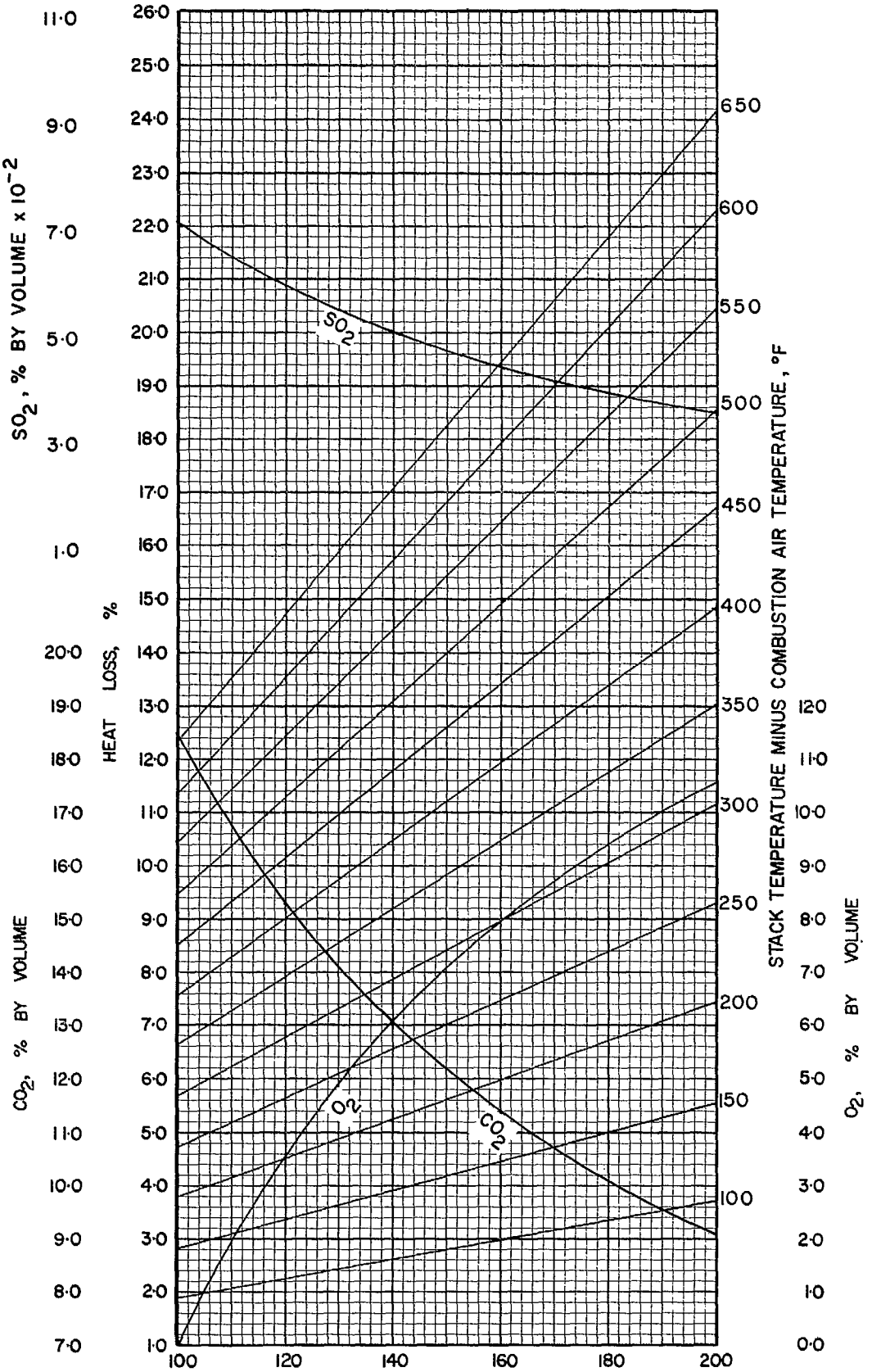

FIGURE 3· DRY FLUE GAS LOSS FOR A RANGE OF TEMPERATURE DIFFERENTIALS

US·WV·8

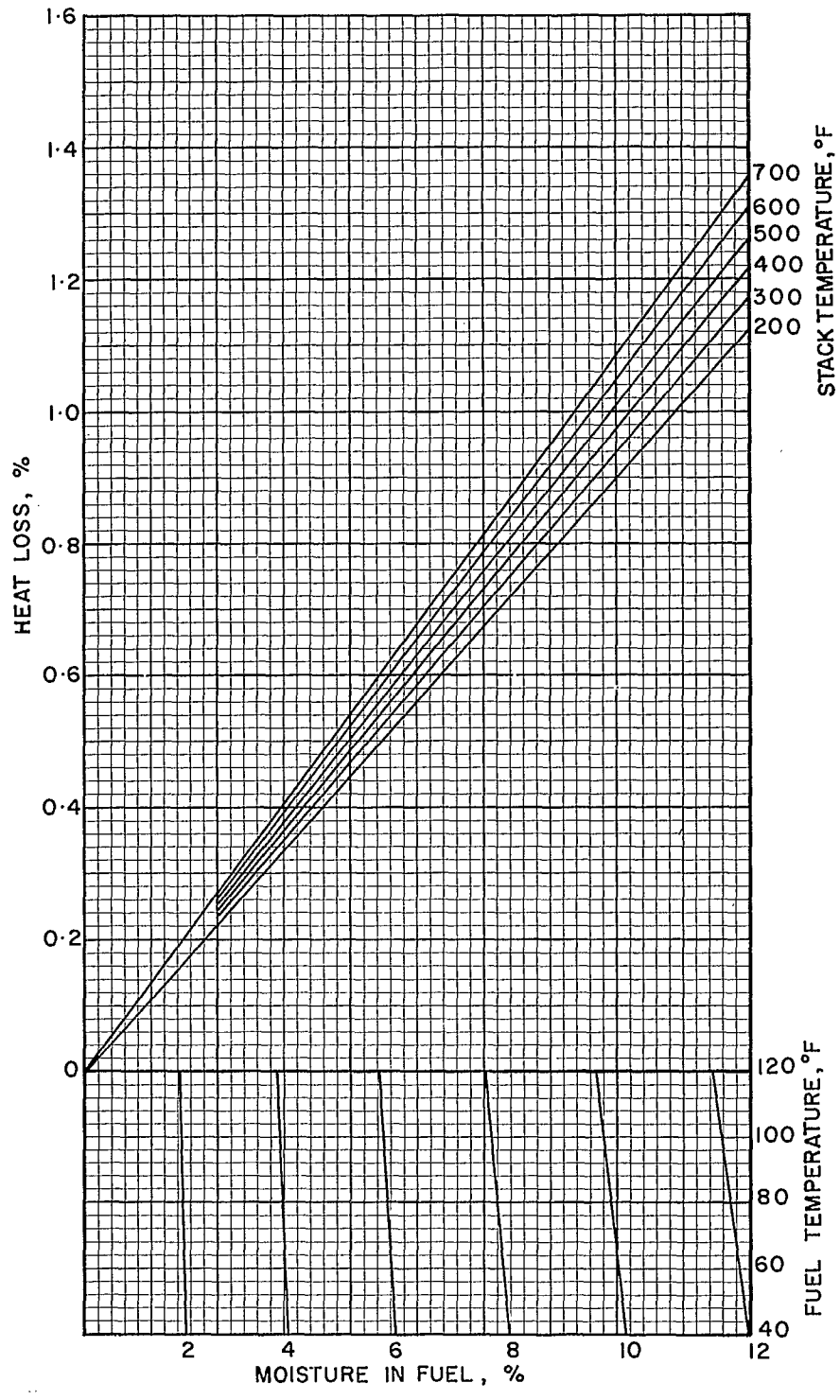

FIGURE 4· HEAT LOSS DUE TO MOISTURE IN COAL

US·WV·8

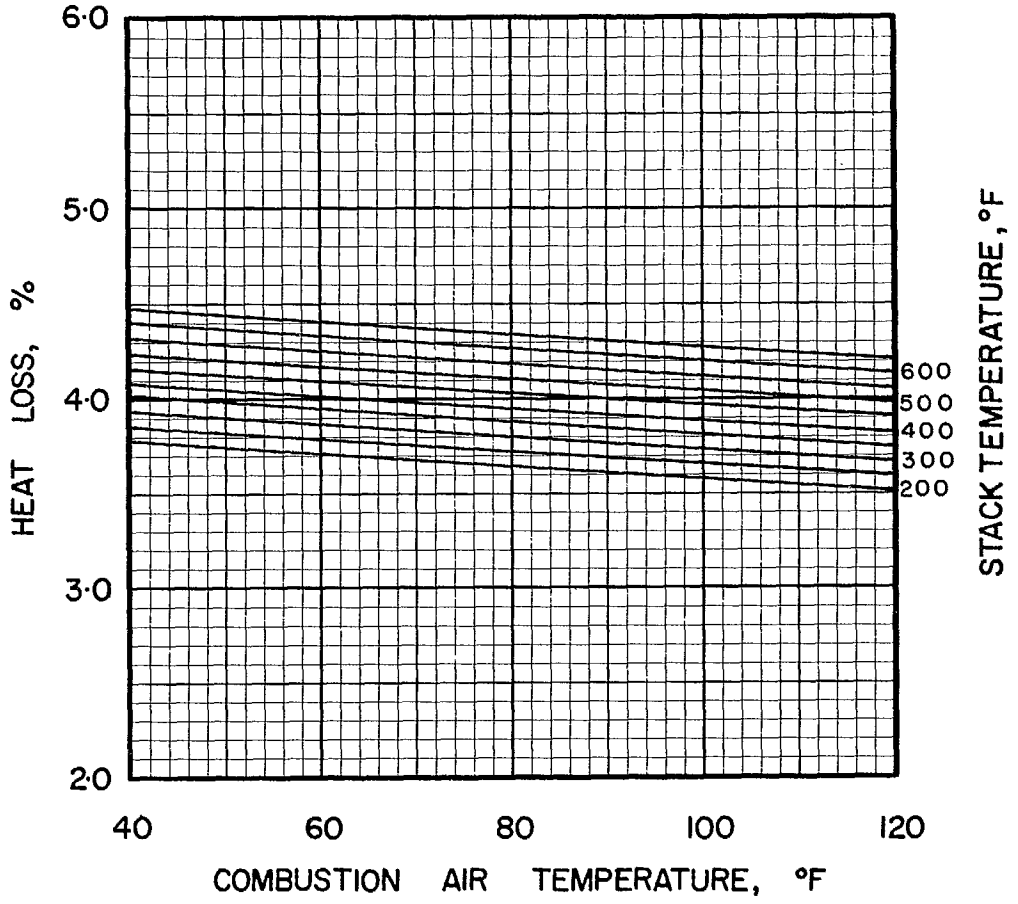

FIGURE 5· HYDROGEN LOSS FOR A RANGE OF STACK TEMPERATURES

US·WV·8

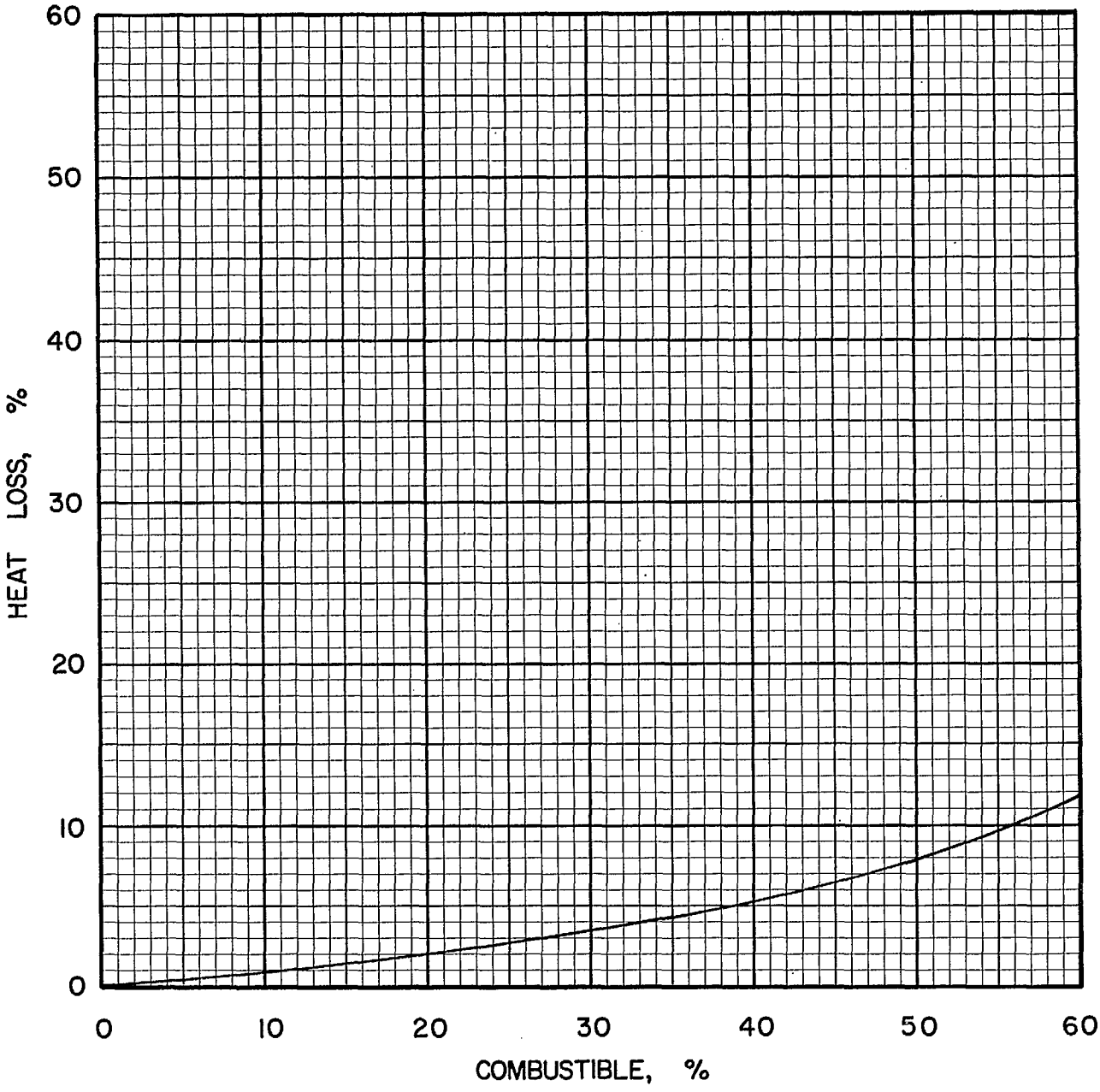

FIGURE 6 HEAT LOSS FOR A RANGE OF COMBUSTIBLE CONCENTRATIONS IN REFUSE

US·WV·8

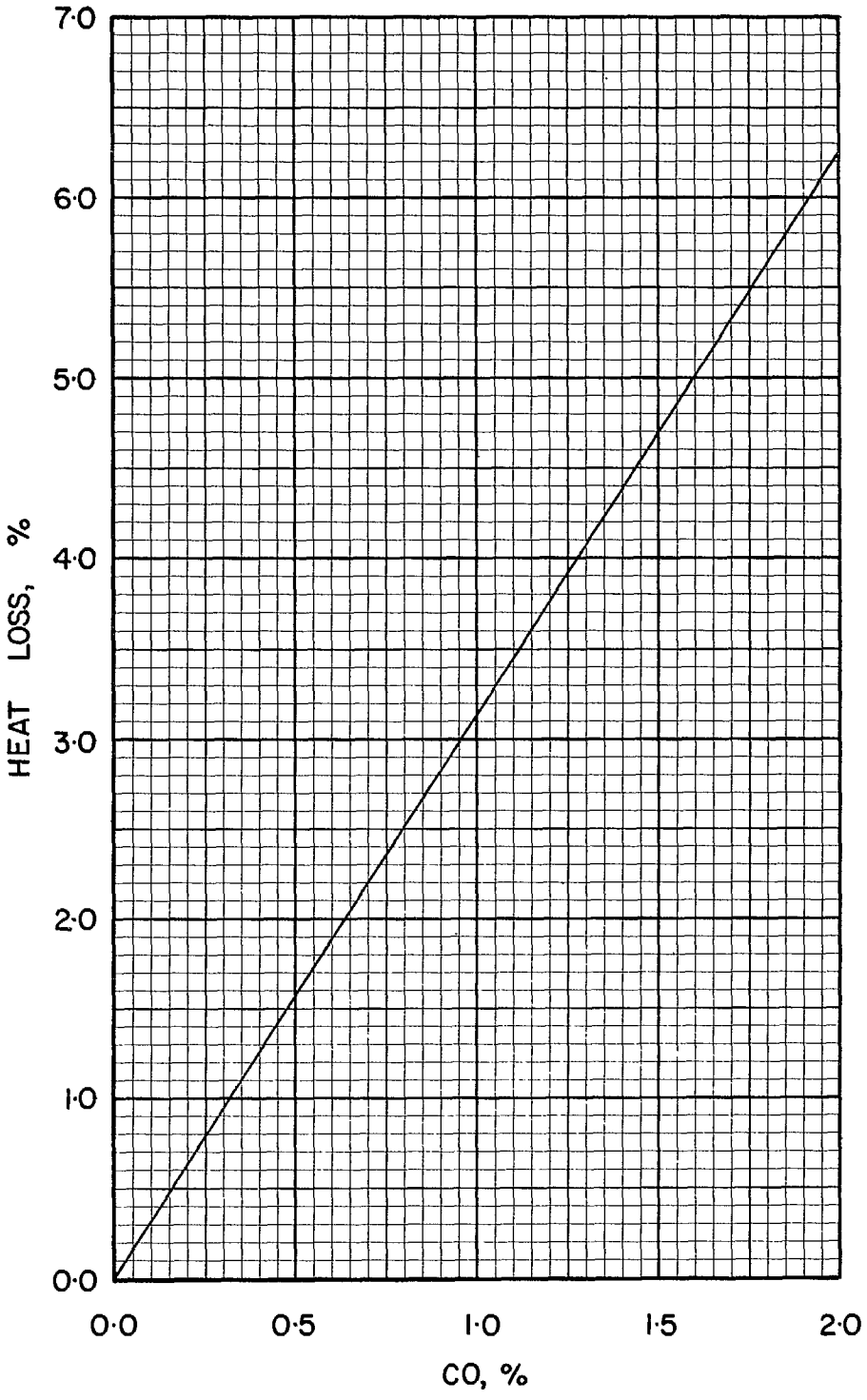

FIGURE 7 · HEAT LOSS FOR A RANGE OF CO CONCENTRATIONS, ASSUMING NEGLIGIBLE EXCESS AIR

US·WV·8

COAL US WV-9, RED JACKET, LOWER CEDARGROVE SEAM

Typical Moisture Range: 0–6%

Proximate Analysis (lb/lb dry coal)

Ash	0.063
Volatile Matter	0.371
Fixed Carbon	0.566
Total	1.000

Ultimate Analysis (lb/lb dry coal)

Carbon (C)	0.798
Hydrogen (H)	0.051
Sulphur (S)	0.006
Nitrogen (N)	0.016
Oxygen (O)	0.066
Ash	0.063
Total	1.000

Gross Calorific Value

Btu/lb:	14110
Btu/short ton:	28.22×10^6
Btu/long ton:	31.61×10^6
MJ/kg:	32.81

Conversion Factors

1 short ton = 0.8929 long tons = 2000 lb
10^6 Btu = 70.87 lb
10^6 Btu = 0.03544 short tons
10^6 Btu = 0.03164 long tons

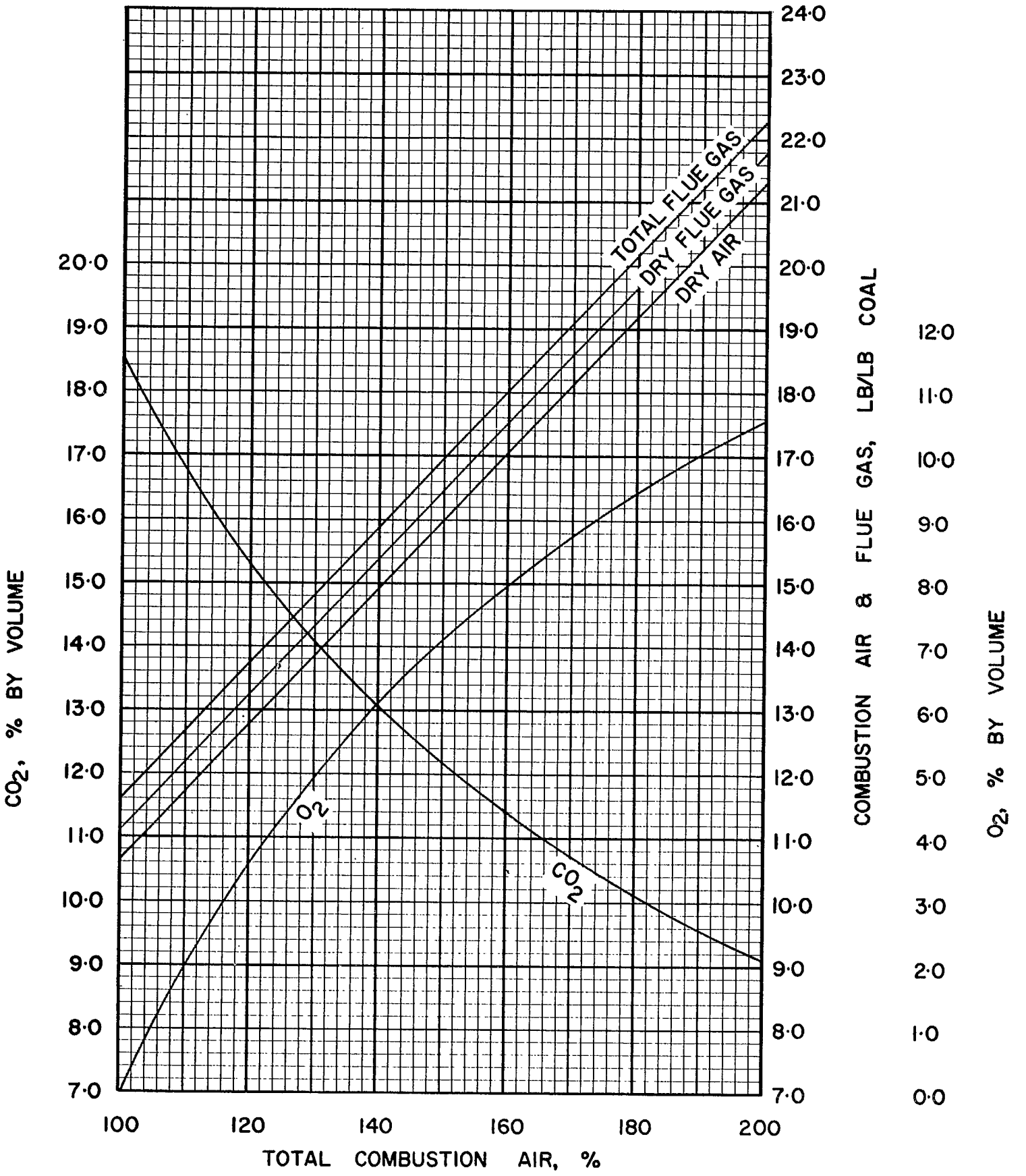

FIGURE 1· COMBUSTION DATA, WEIGHT BASIS US·WV·9

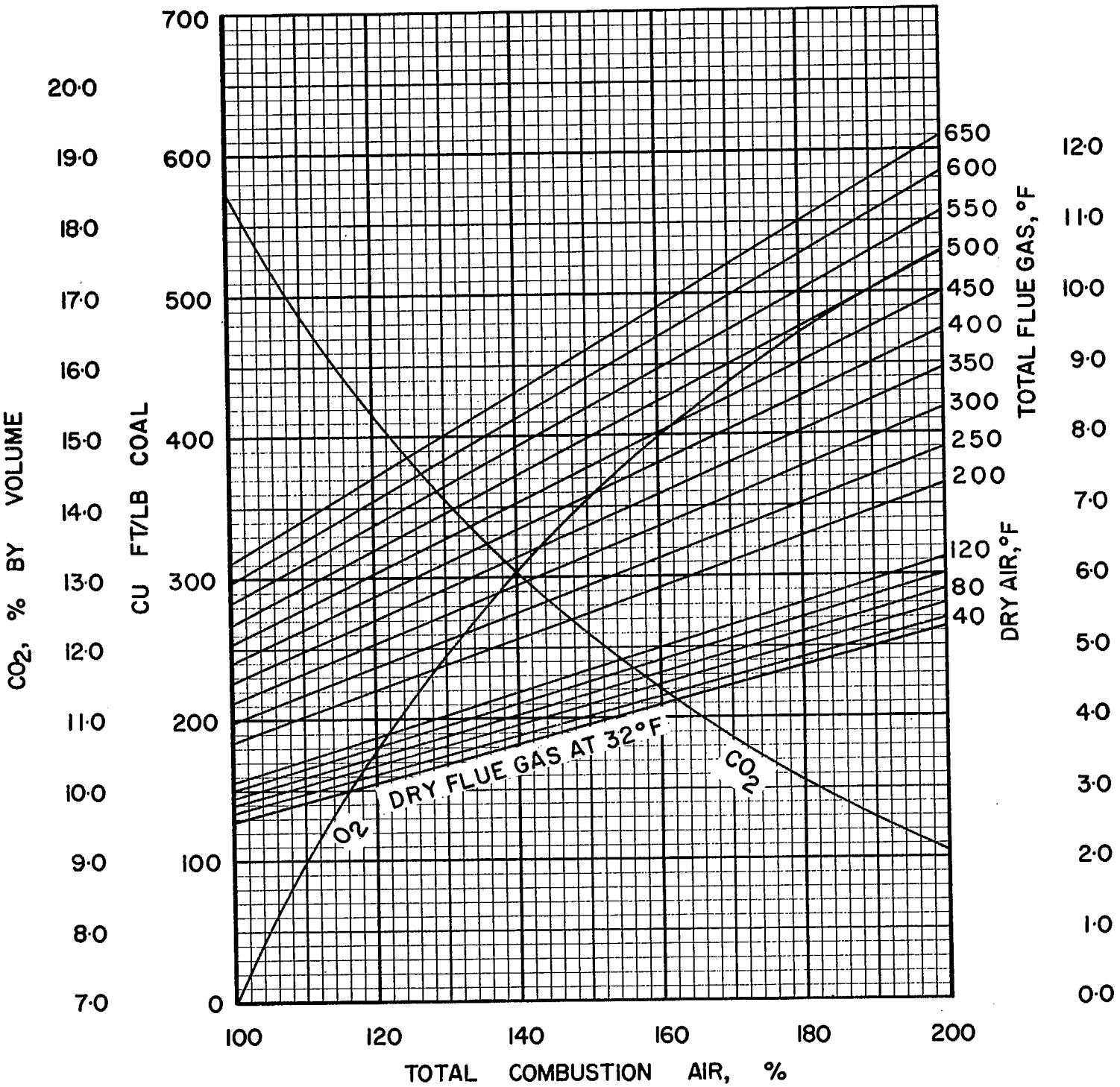

FIGURE 2· COMBUSTION DATA, VOLUME BASIS

US·WV·9

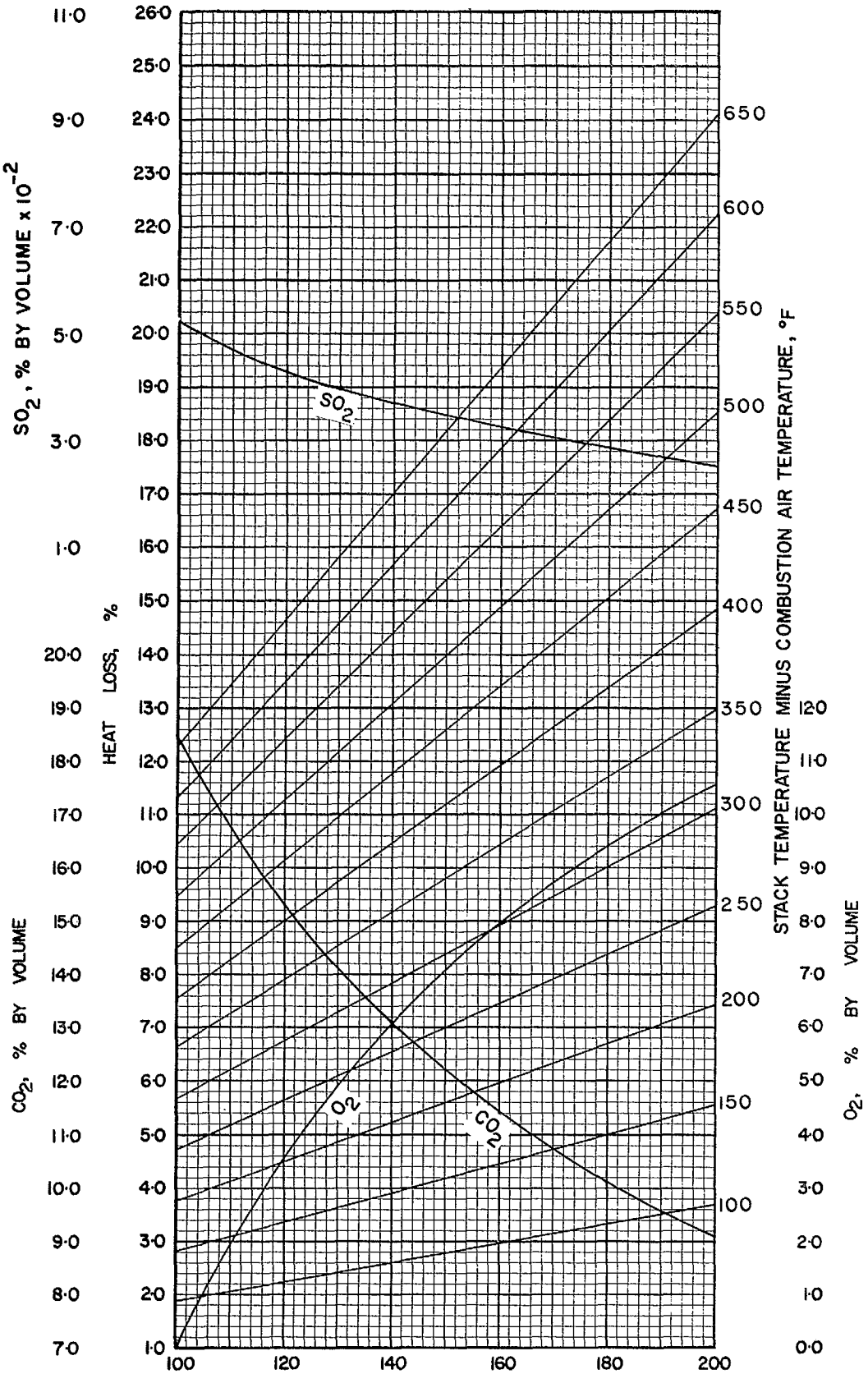

FIGURE 3· DRY FLUE GAS LOSS FOR A RANGE OF TEMPERATURE DIFFERENTIALS

US·WV·9

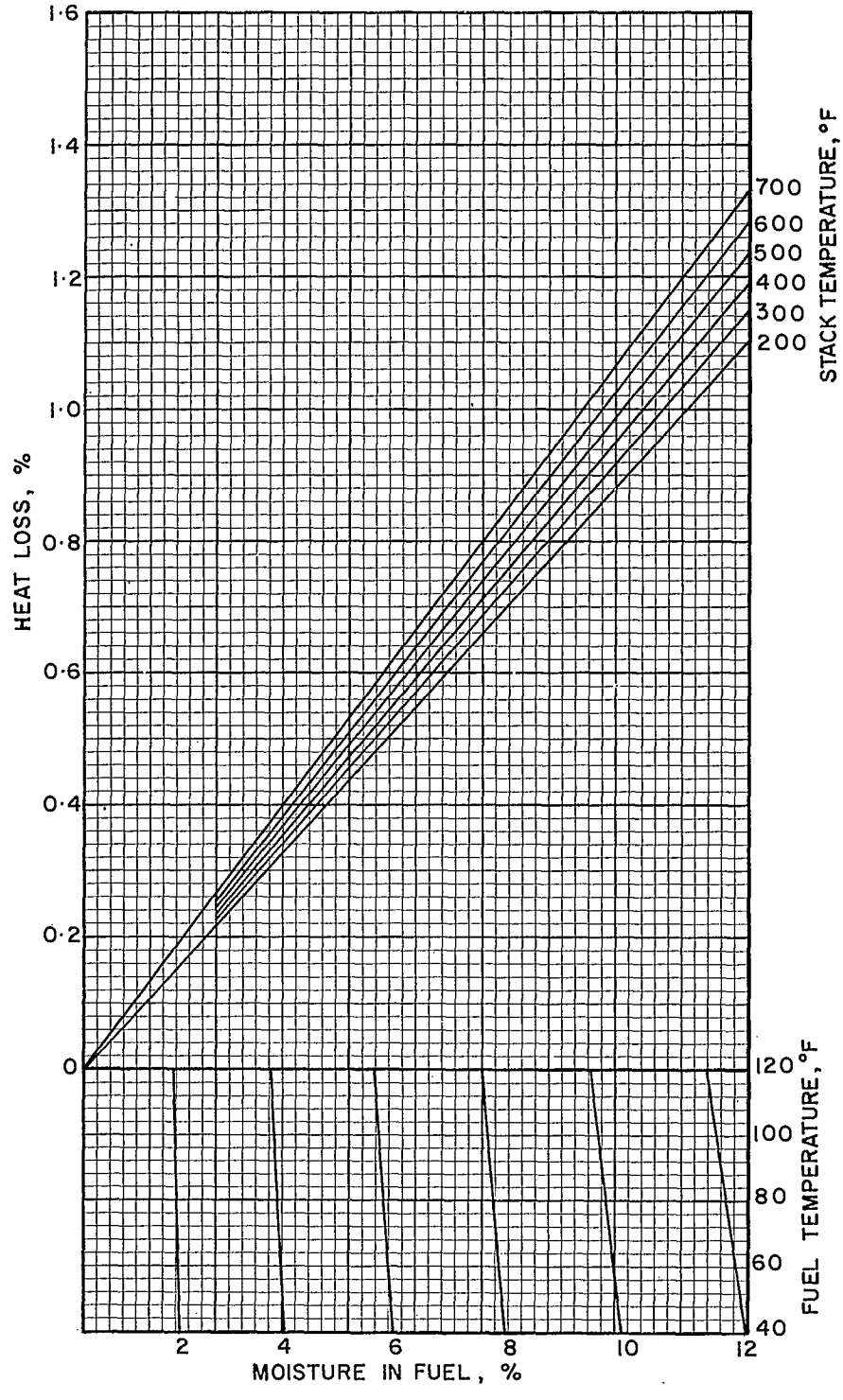

FIGURE 4· HEAT LOSS DUE TO MOISTURE IN COAL

US·WV·9

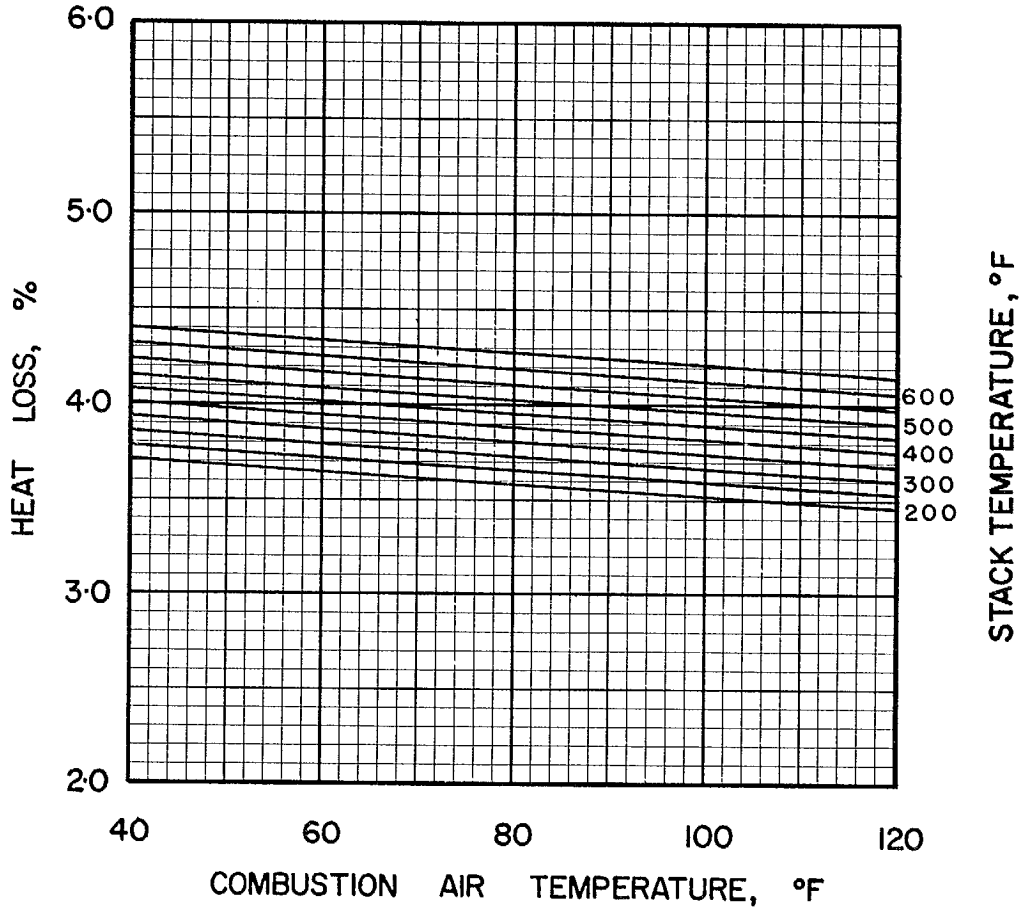

FIGURE 5· HYDROGEN LOSS FOR A RANGE OF STACK TEMPERATURES

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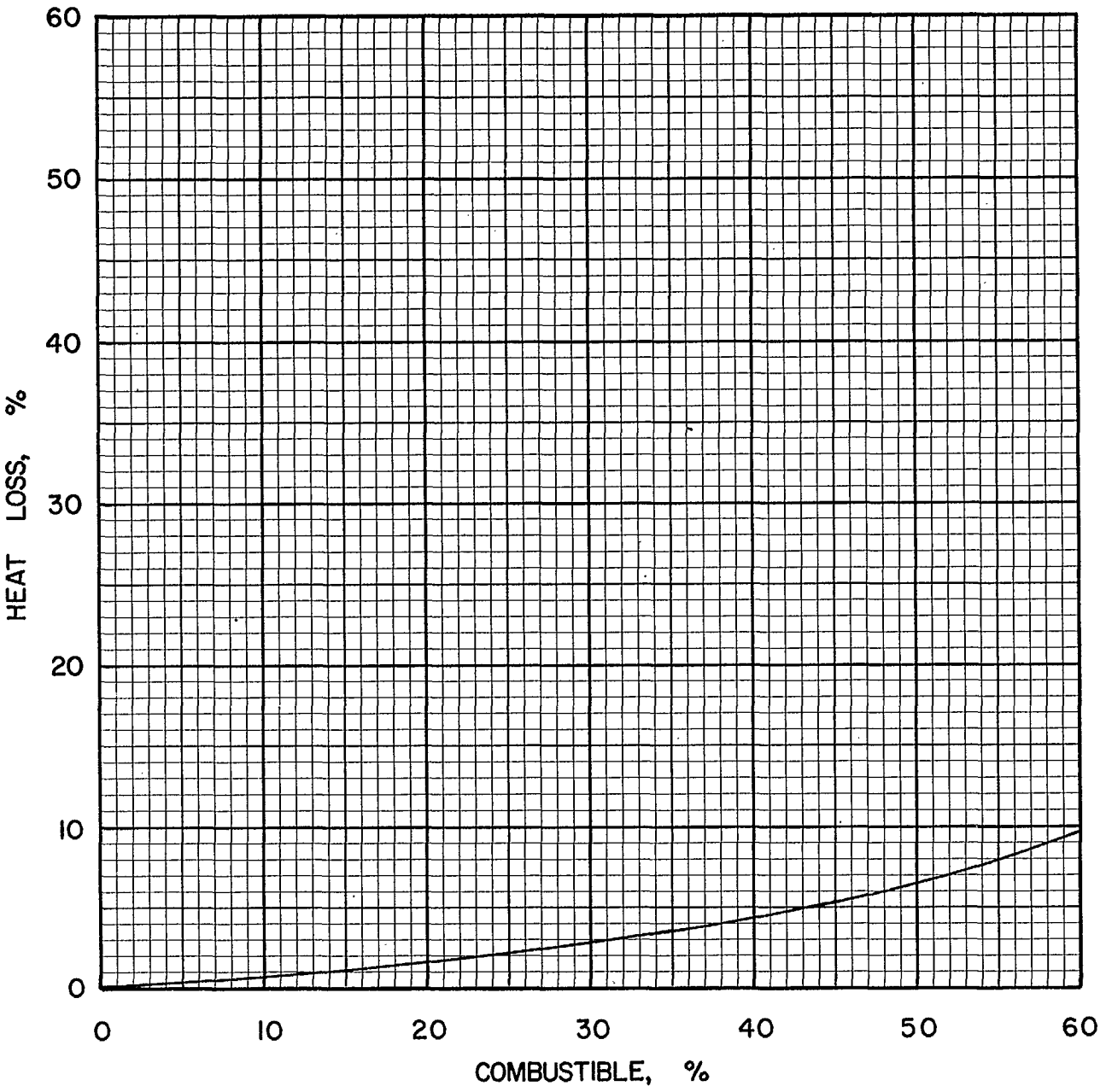

FIGURE 6 HEAT LOSS FOR A RANGE OF COMBUSTIBLE CONCENTRATIONS IN REFUSE

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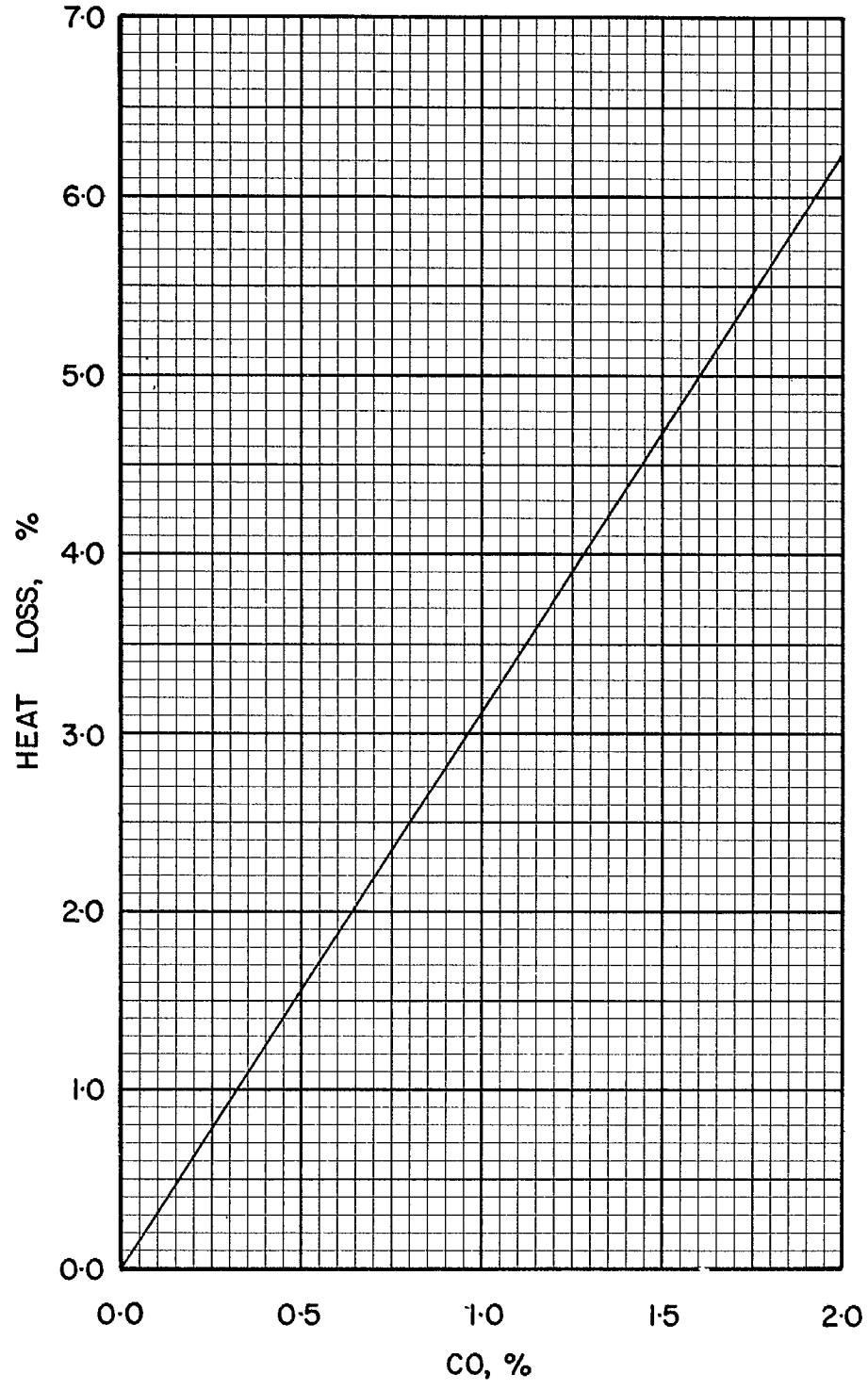

FIGURE 7 · HEAT LOSS FOR A RANGE OF CO CONCENTRATIONS, ASSUMING NEGLIGIBLE EXCESS AIR

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