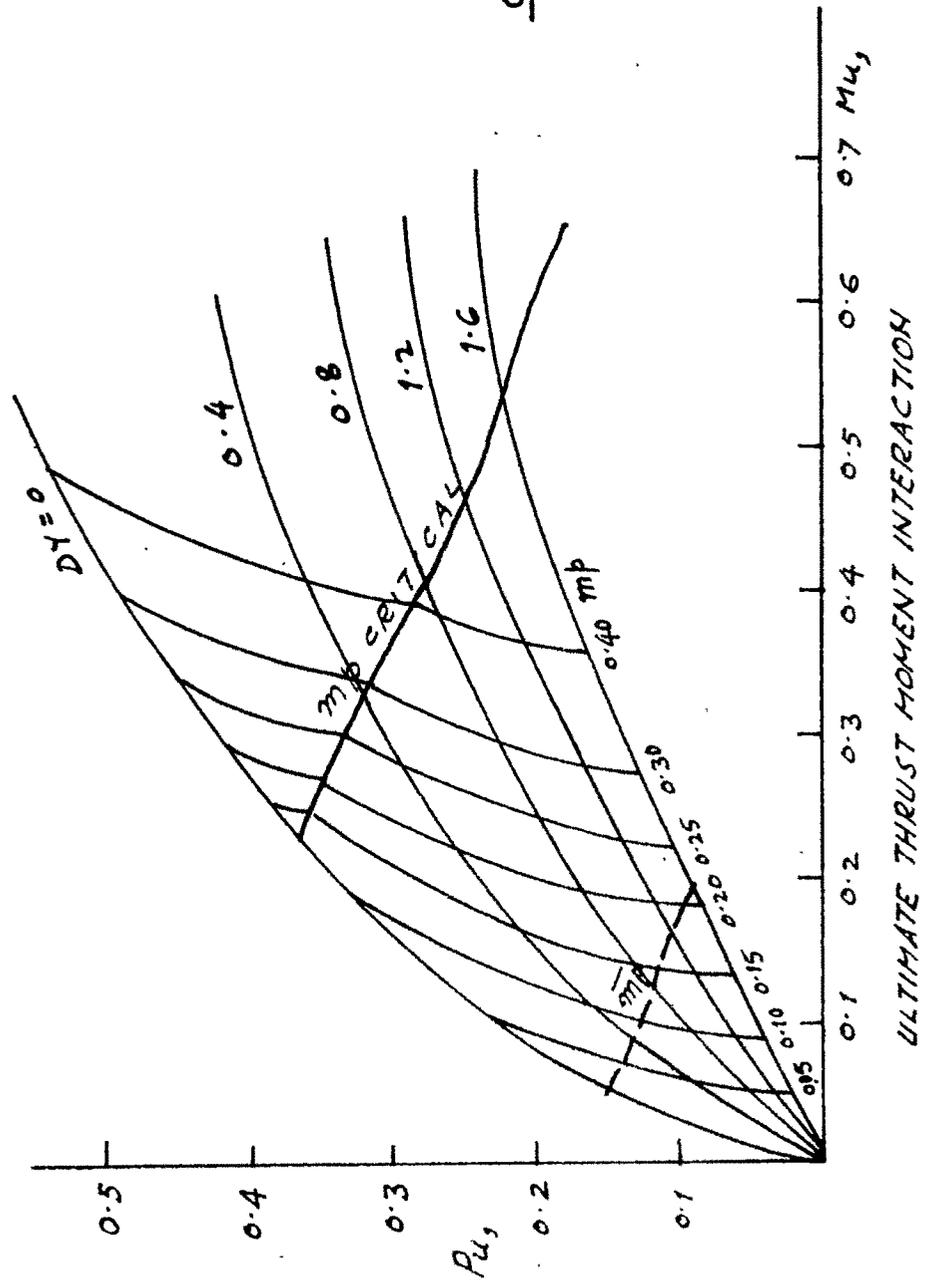# APPENDIX E

ULTIMATE THRUST MOMENT INTERACTION
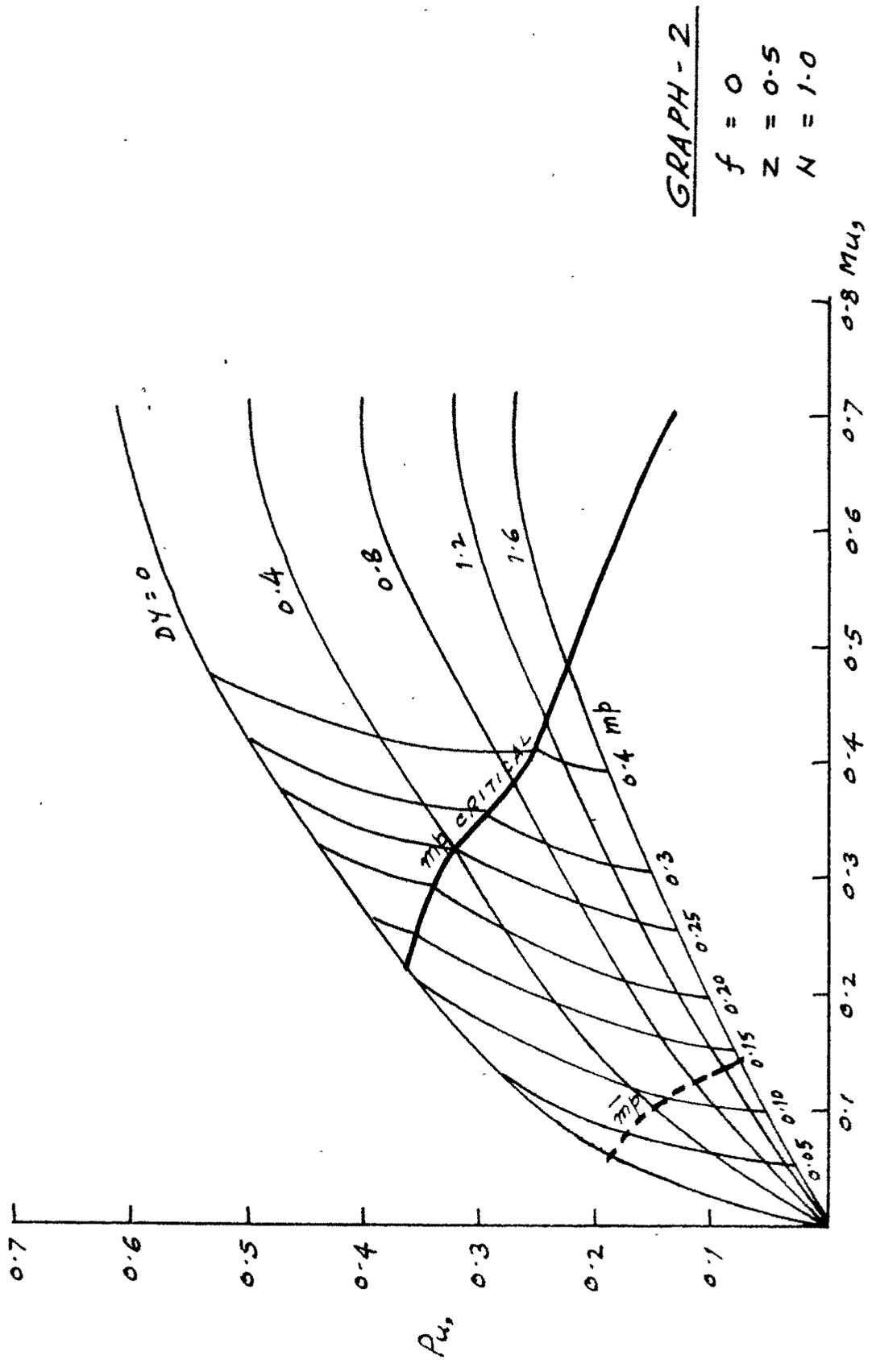
Appendix E contains Graph Nos. 1 to 98 detailed as under:

GRAPH - 1

f = 0
z = 0.5
N = 0.9

ULTIMATE THRUST MOMENT INTERACTION

M_{u},

P_{u},

DY = 0

0.4

0.8

1.2

1.6

mp crit CAL

mp

mp 0.40

0.30

0.25

0.20

0.15

0.10

0.05

0.5

0.4

0.3

0.2

0.1

0.1   0.2   0.3   0.4   0.5   0.6   0.7

ULTIMATE THRUST MOMENT INTERACTION

GRAPH - 2

$f = 0$
$z = 0.5$
$N = 1.0$
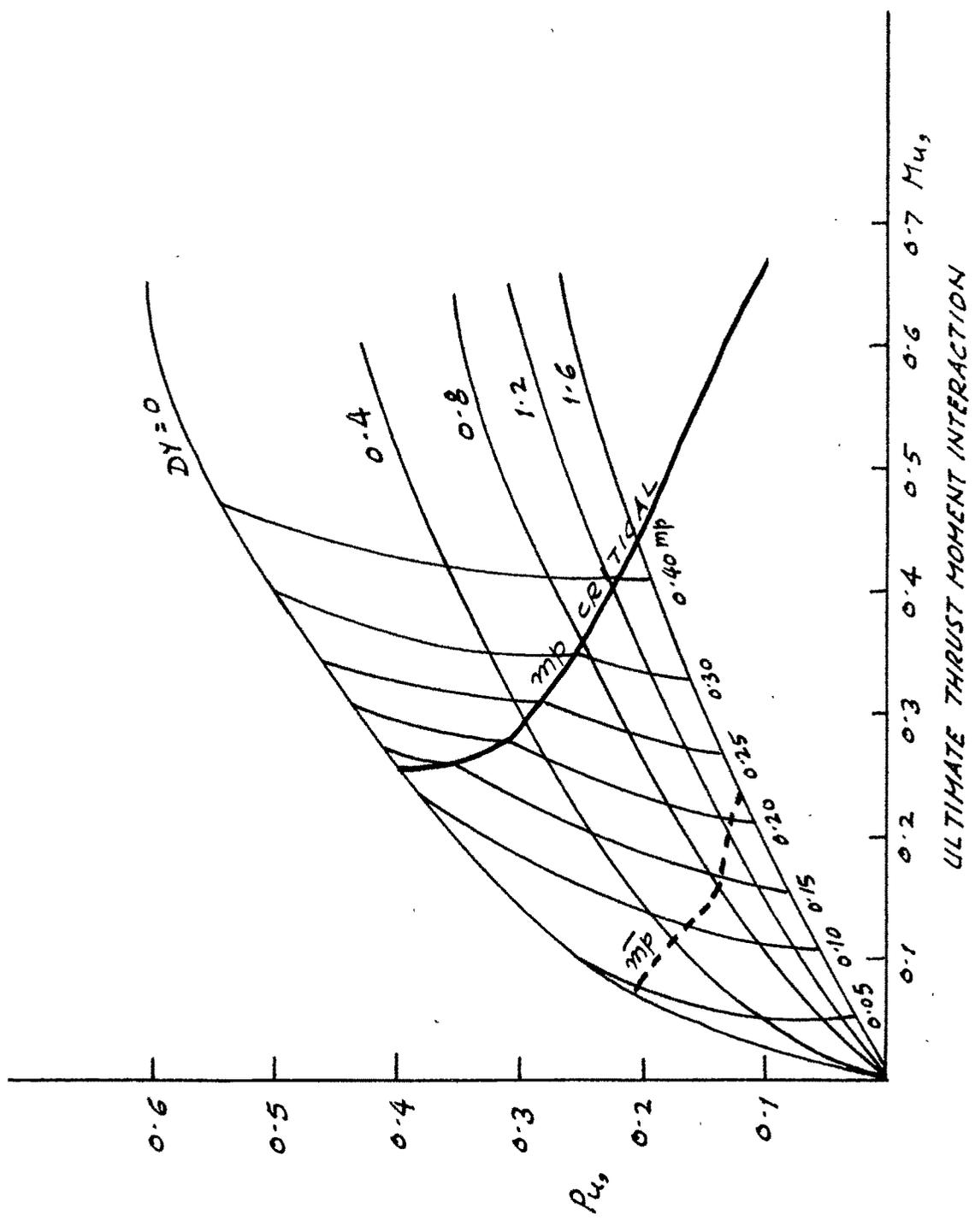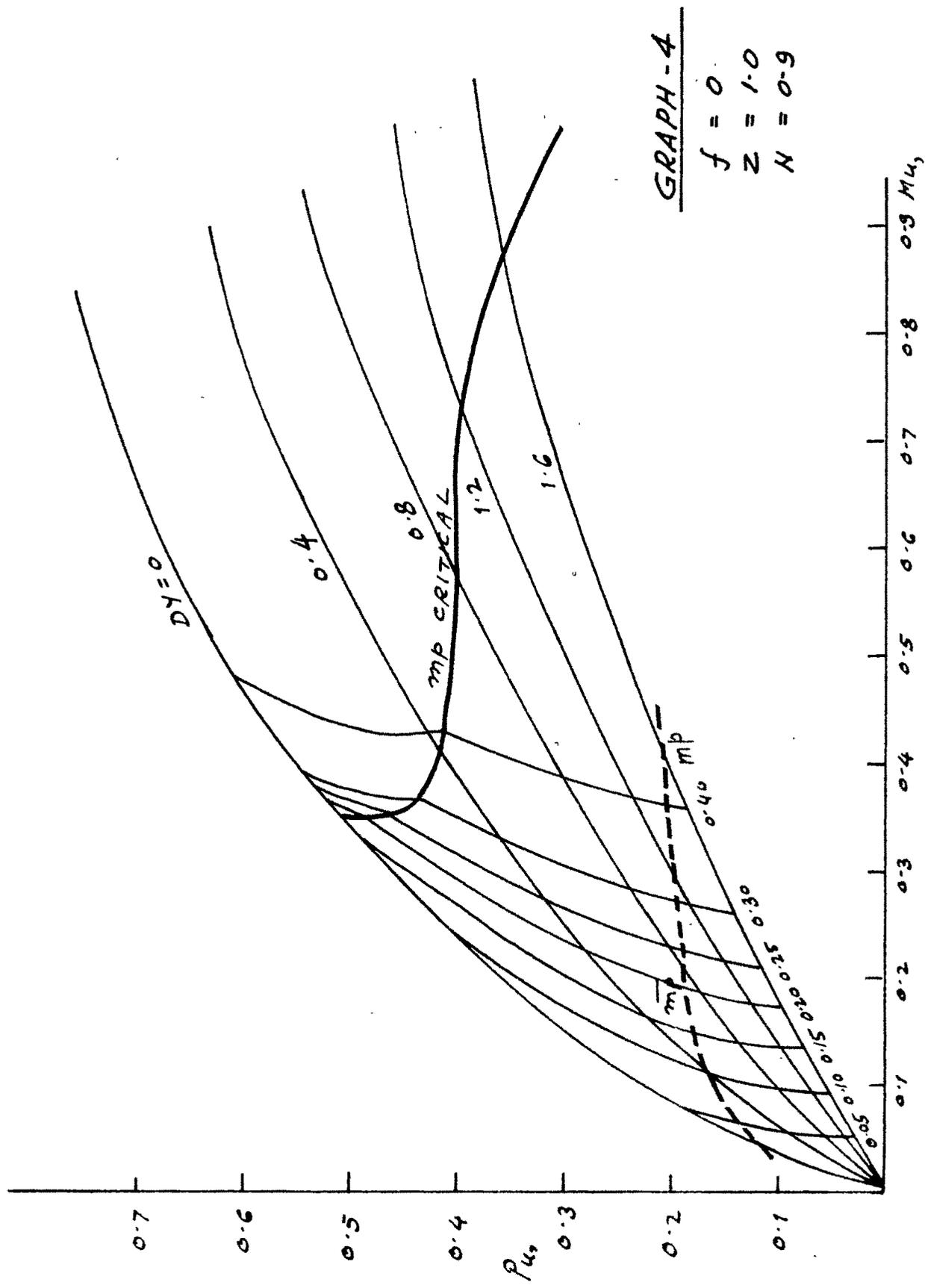
172

GRAPH - 3

$f = 0$
$z = 0.5$
$N = 1.1$

ULTIMATE THRUST MOMENT INTERACTION

Mu,

Pu,

GRAPH - 4

$f = 0$
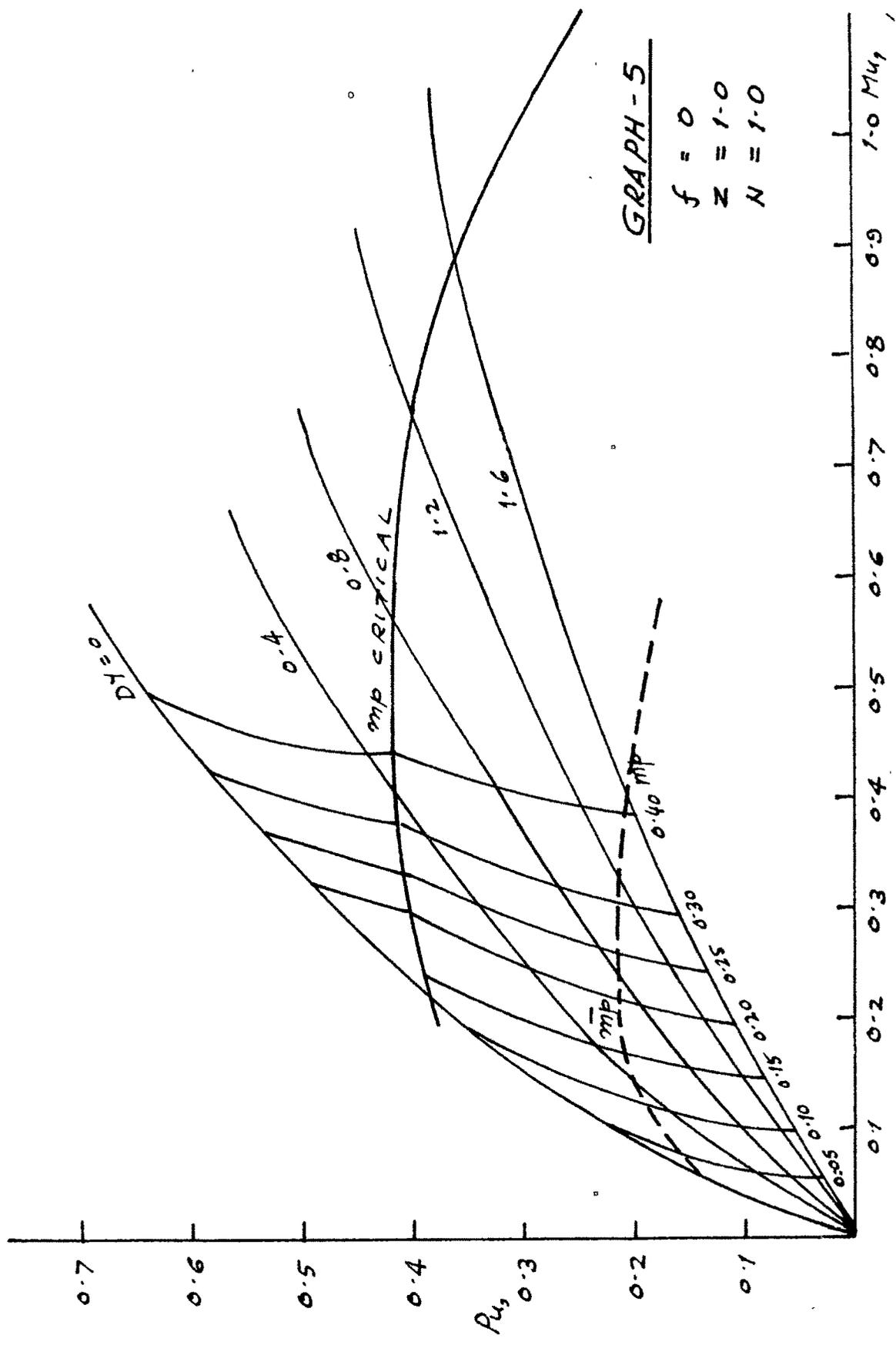$Z = 1.0$
$H = 0.9$

ULTIMATE THRUST MOMENT INTERACTION

DY = 0

0.4

0.8

mp CRITICAL

1.2

1.6

mp

0.40

0.30

0.025

0.020

0.015

0.010

0.005

Mu,

0.9

0.8

0.7

0.6

0.5

0.4

0.3

0.2

0.1

Pu,

0.7

0.6

0.5

0.4

0.3

0.2

0.1

17/4

GRAPH - 5

$f = 0$
$z = 0 \cdot 1$
$N = 1 \cdot 0$

ULTIMATE THRUST MOMENT INTERACTION

Pu_1

Mu_1

$D1 = 0$

$0 \cdot 4$

$0 \cdot 8$

mp CRITICAL

$1 \cdot 2$

$1 \cdot 6$

mp

0·40

0·30
0·25
0·20
0·15
0·10
0·005

0·7
0·6
0·5
0·4
0·3
0·2
0·1

0·1 0·2 0·3 0·4 0·5 0·6 0·7 0·8 0·9 1·0

175

GRAPH - 6

$f = 0$
$z = 1.0$
$N = 1.1$

ULTIMATE THRUST MOMENT INTERACTION

Mu_s

Pu_s

mp CRITICAL

$\sqrt{mp}$

mp

0.40
0.30
0.25
0.20
0.15
0.10
0.05
0.0

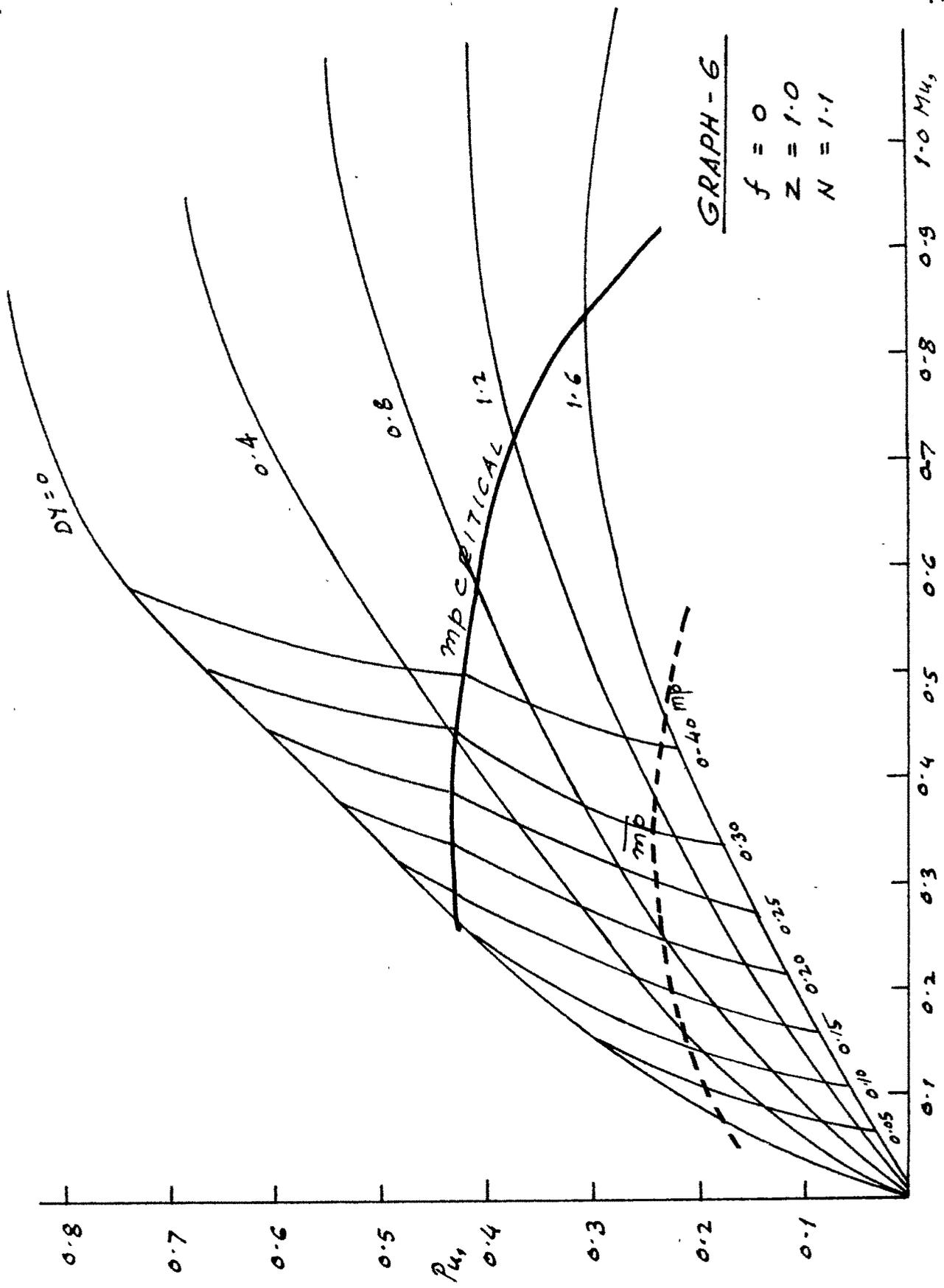$q = 1.0$

0.0

0.4

0.8

1.2

1.6
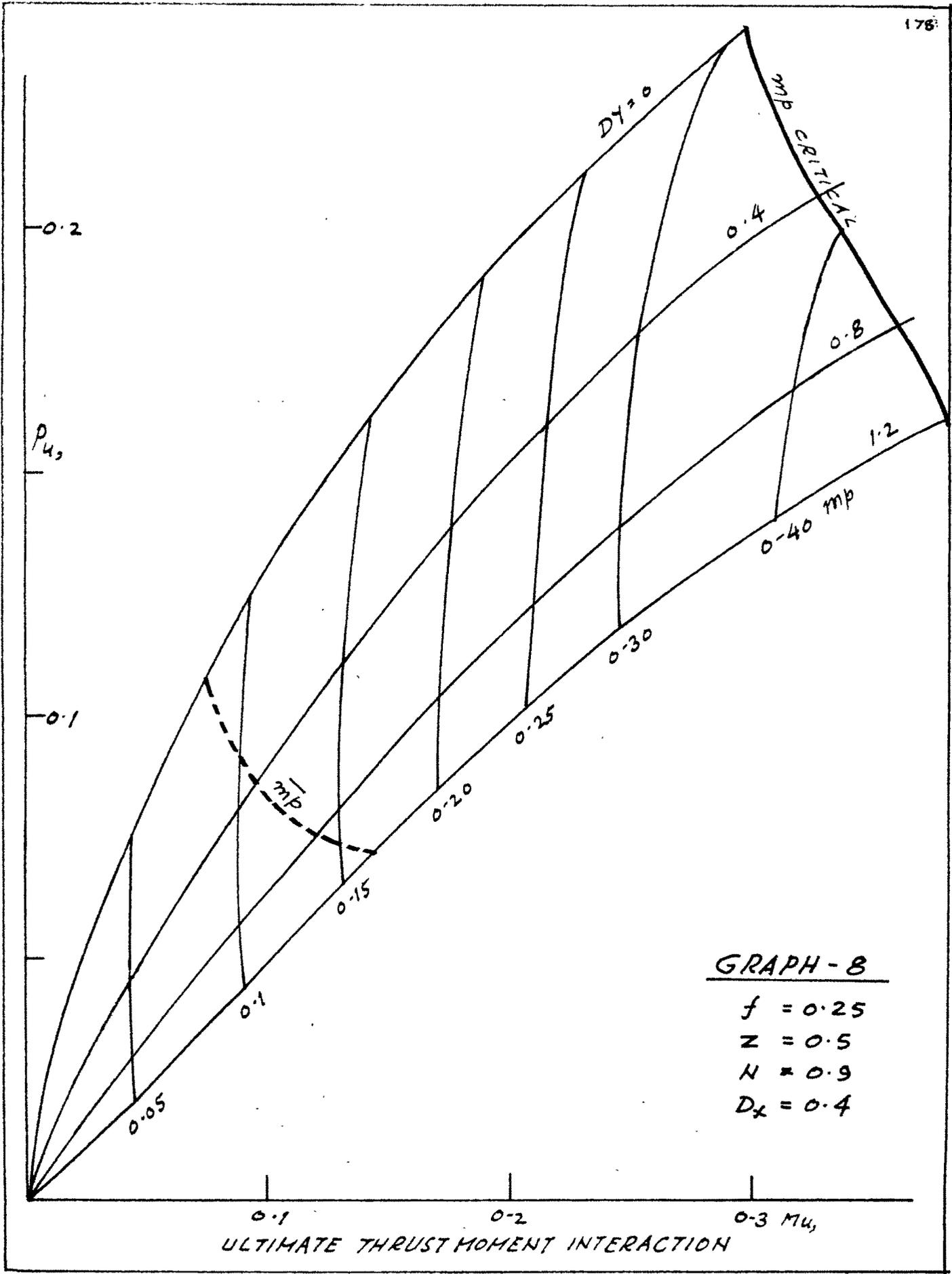
17б

ULTIMATE THRUST MOMENT INTERACTION
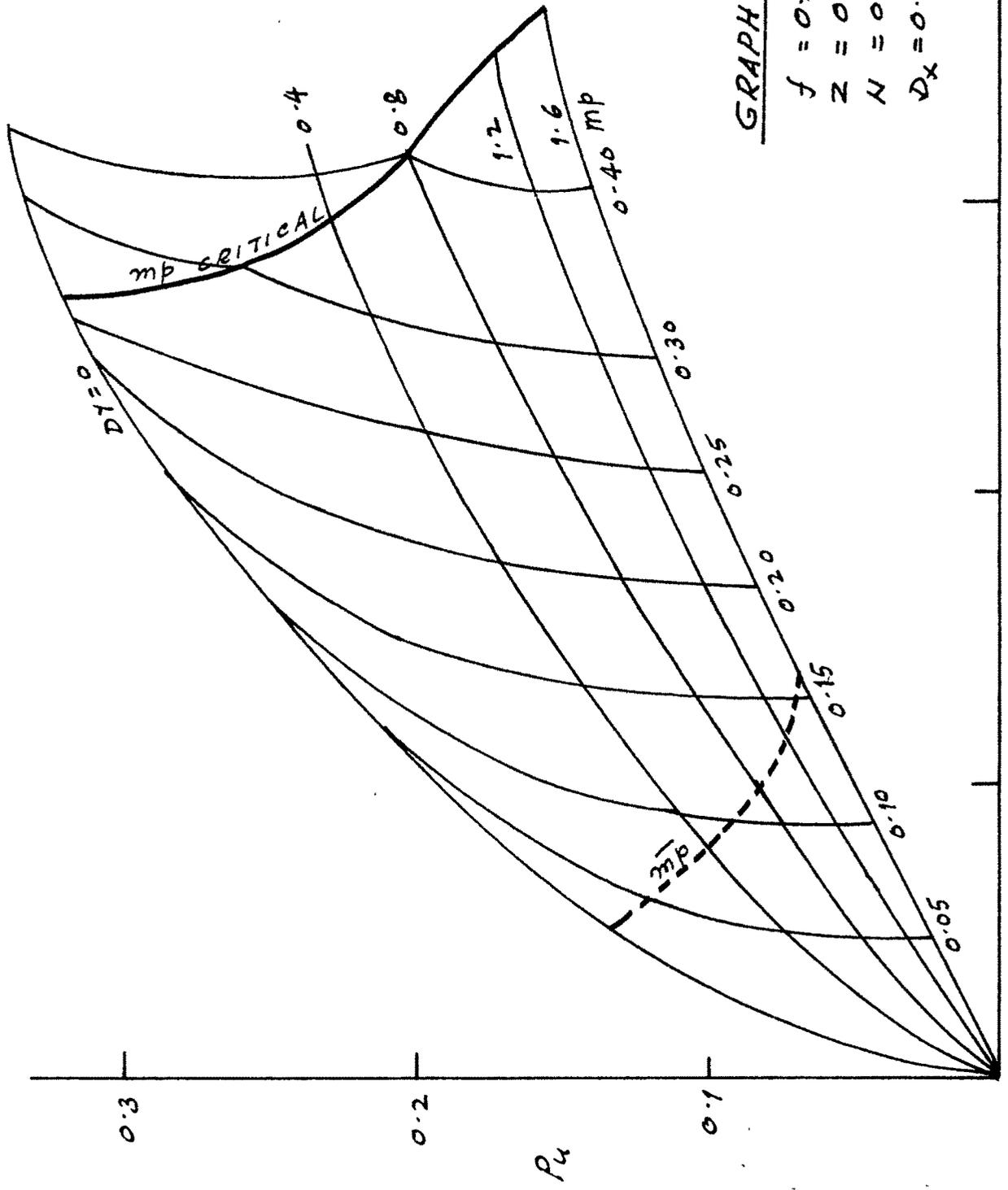
GRAPH - 7

$f = 0.25$
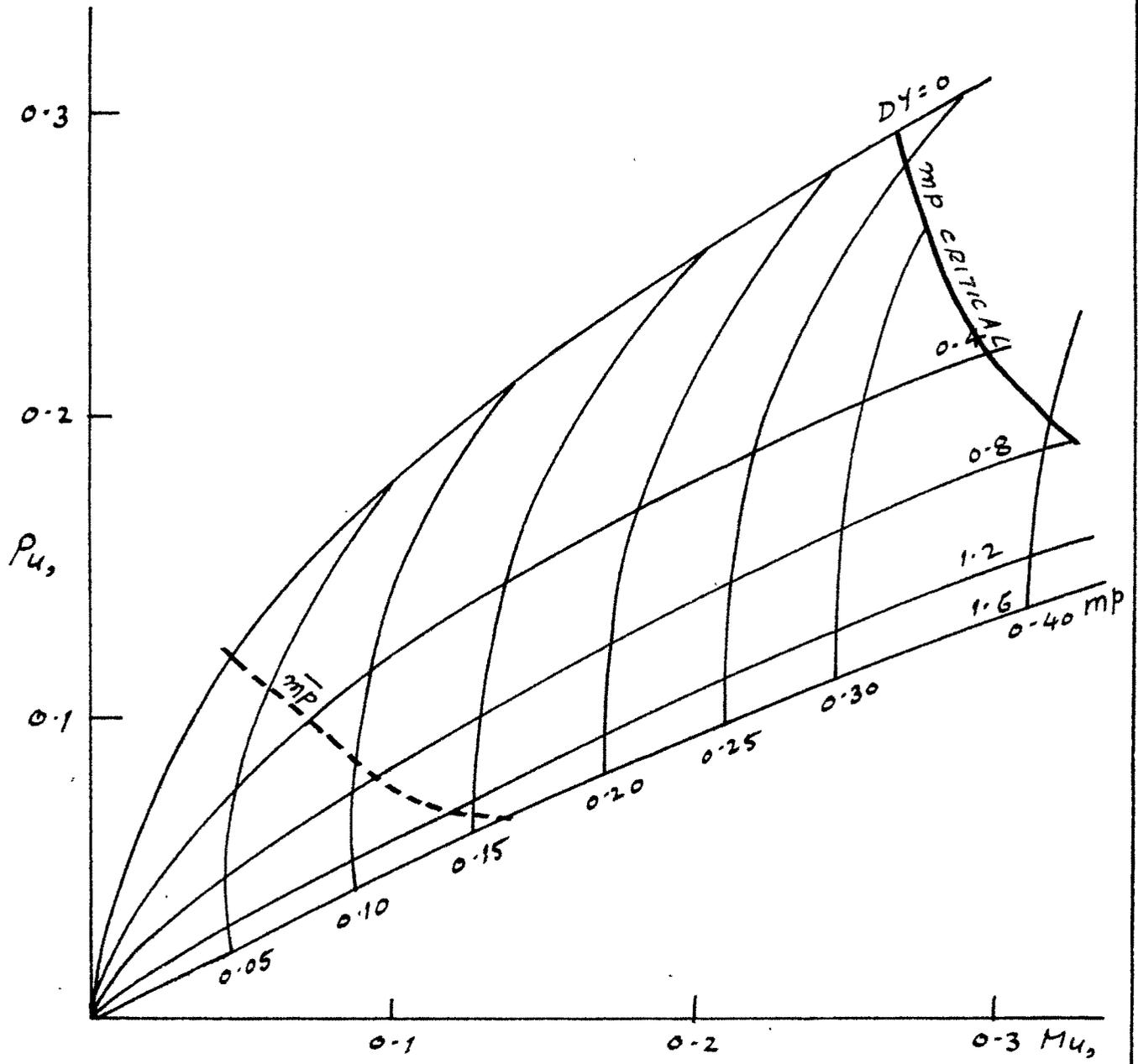$z = 0.5$
$N = 0.9$
$Dx = 0$

ULTIMATE THRUST MOMENT INTERACTION
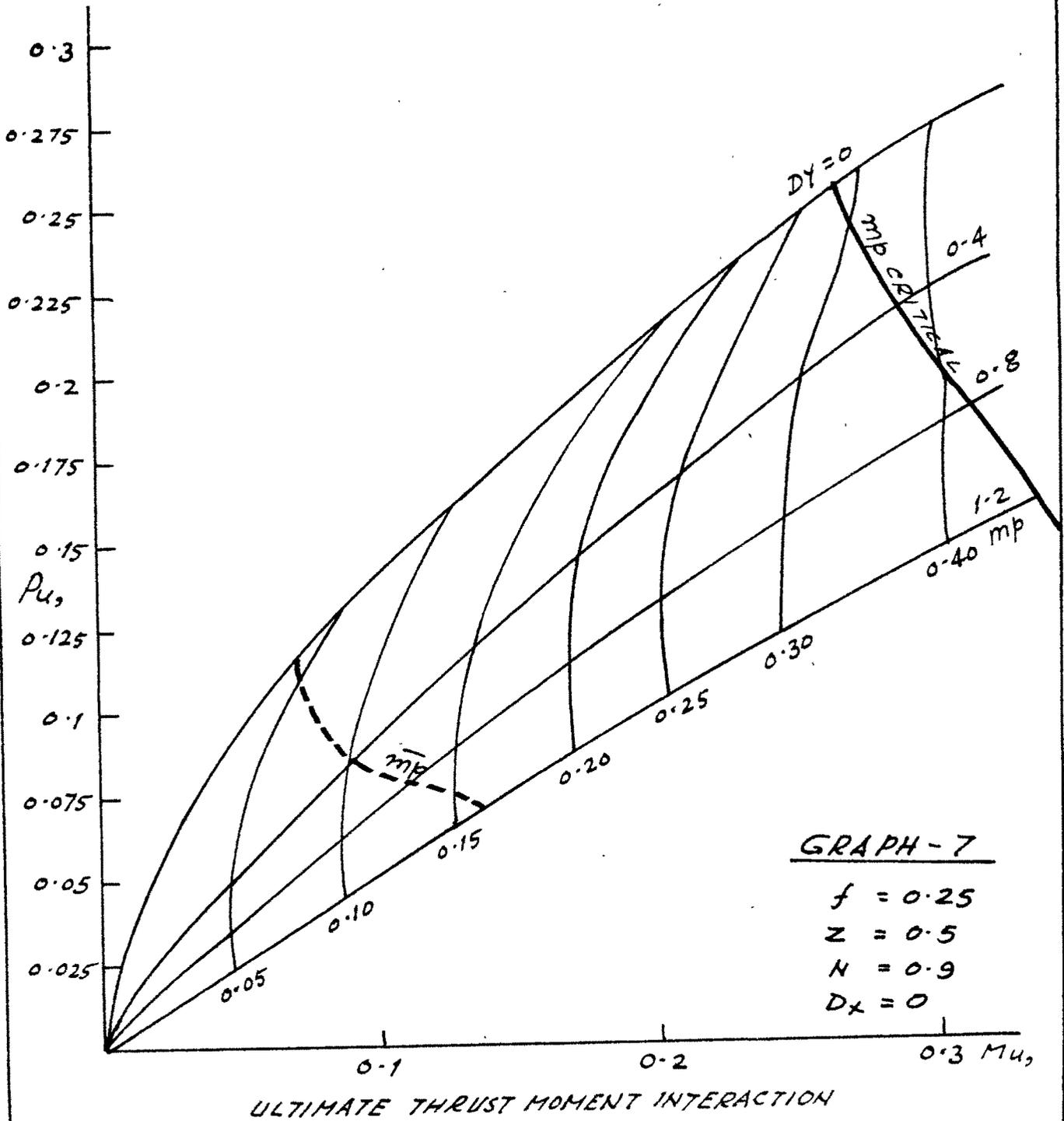
GRAPH - 8
$f = 0.25$
$z = 0.5$
$N = 0.9$
$D_x = 0.4$

GRAPH - 9

$f = 0.25$
$z = 0.5$
$N = 0.9$
$D_t = 0.8$

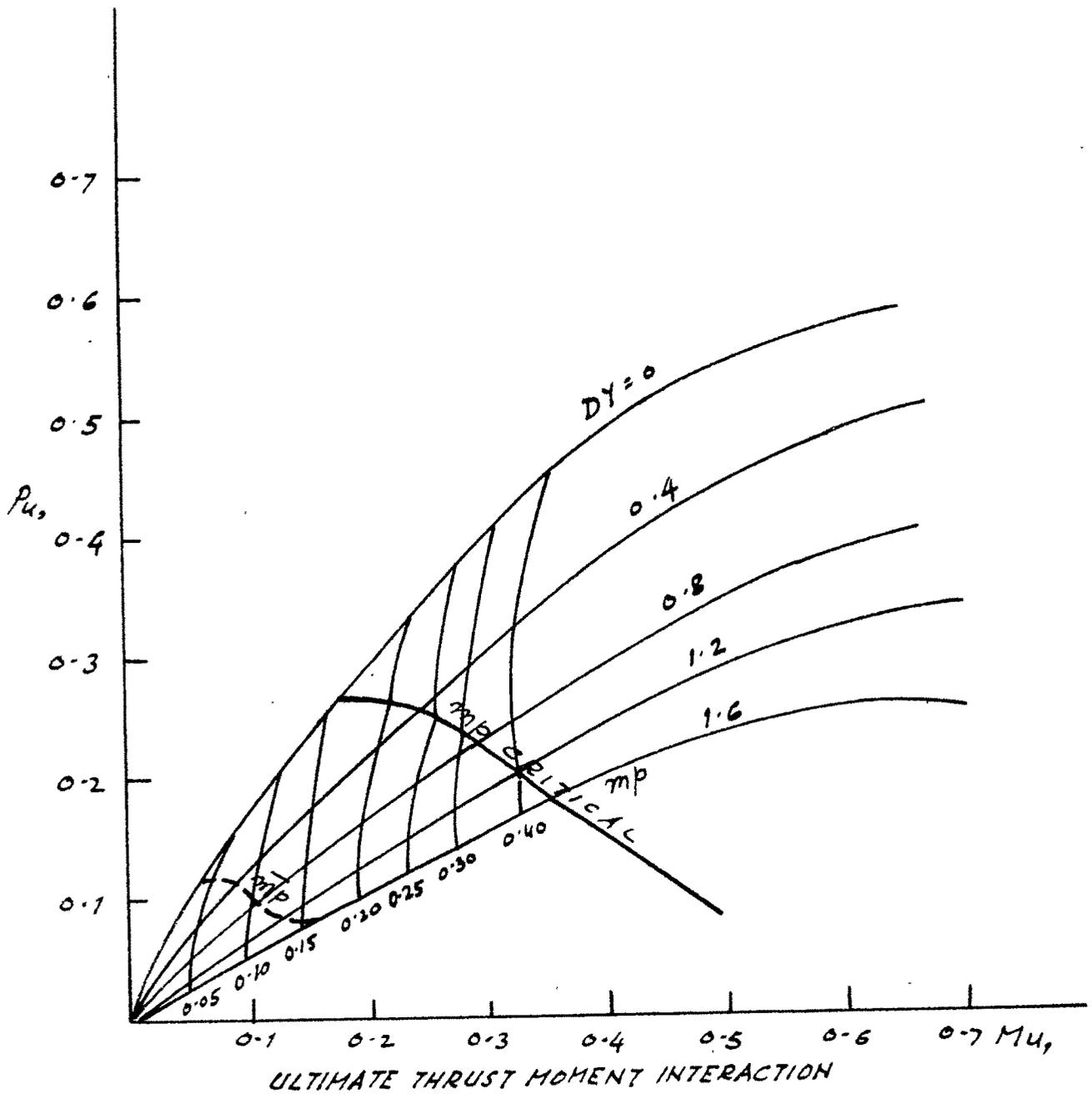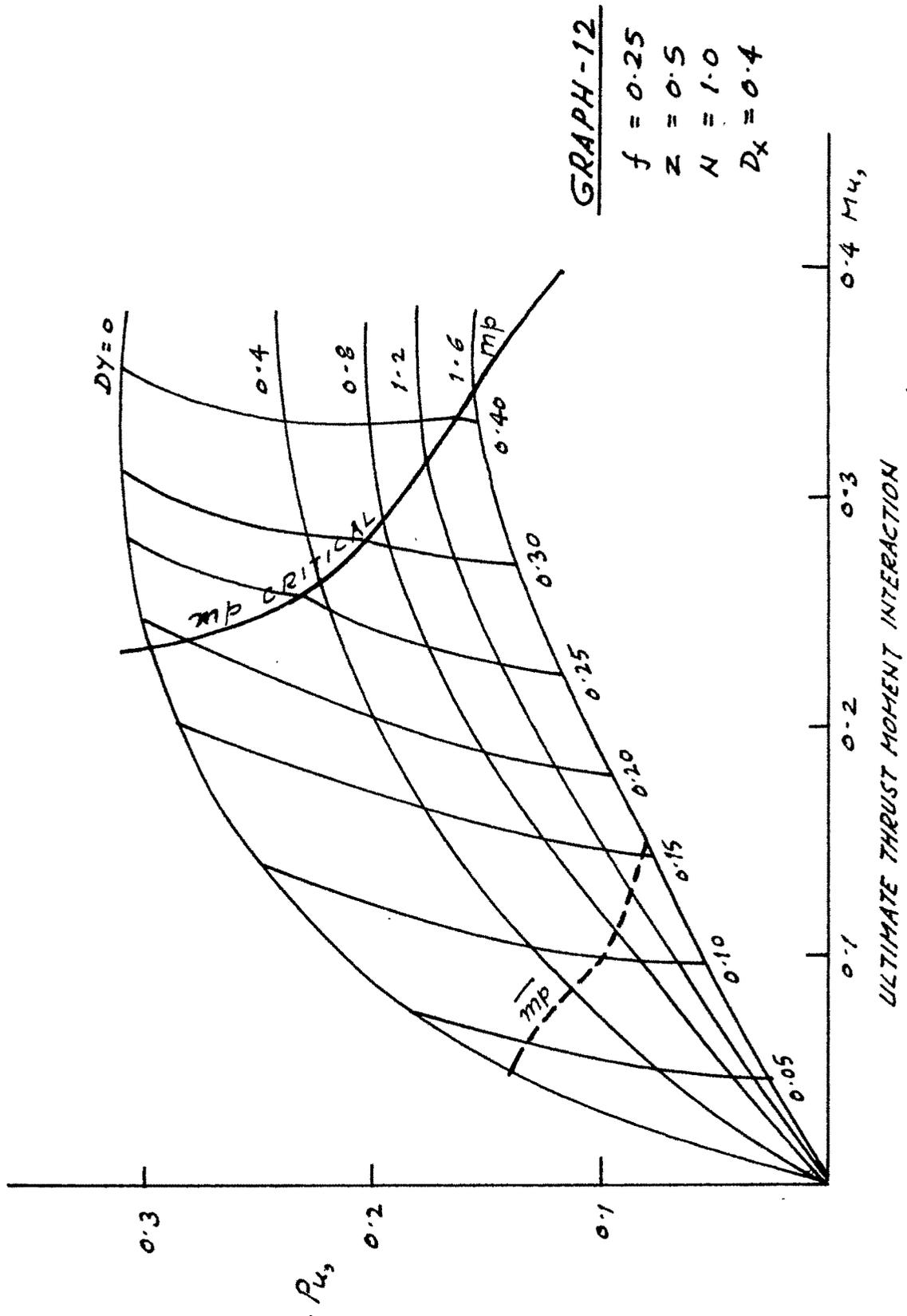ULTIMATE THRUST MOMENT INTERACTION

ULTIMATE THRUST MOMENT INTERACTION
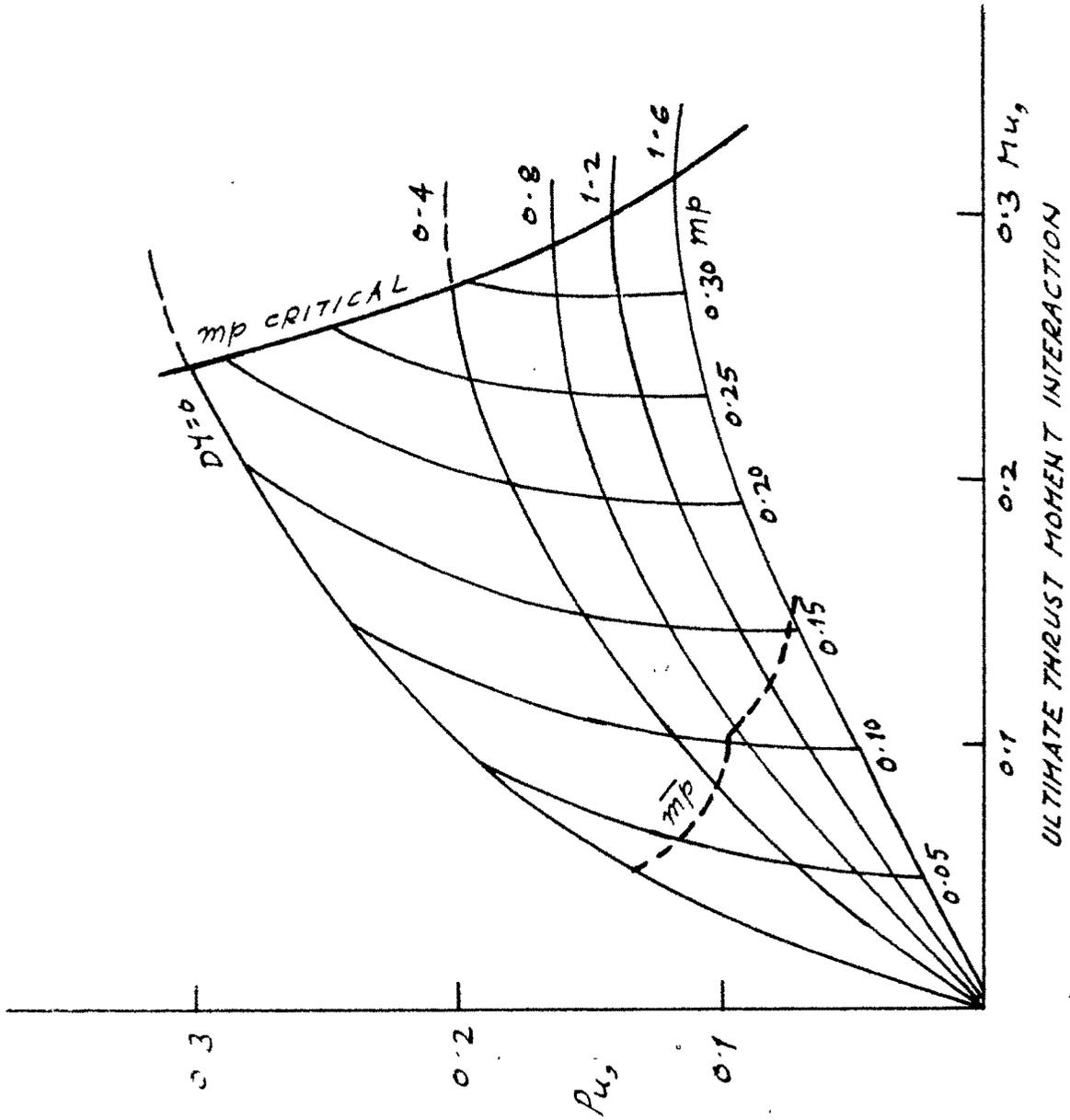
GRAPH - 10

$f = 0.25$

$z = 0.5$

$N = 0.9$

$D_x = 1.2$

ULTIMATE THRUST MOMENT INTERACTION

GRAPH - 11

$f = 0.25$
$z = 0.5$
$N = 1.0$
$D_x = 0$

GRAPH-12

$f = 0.25$
$z = 0.5$
$N = 1.0$
$D_x = 0.4$

DY=0
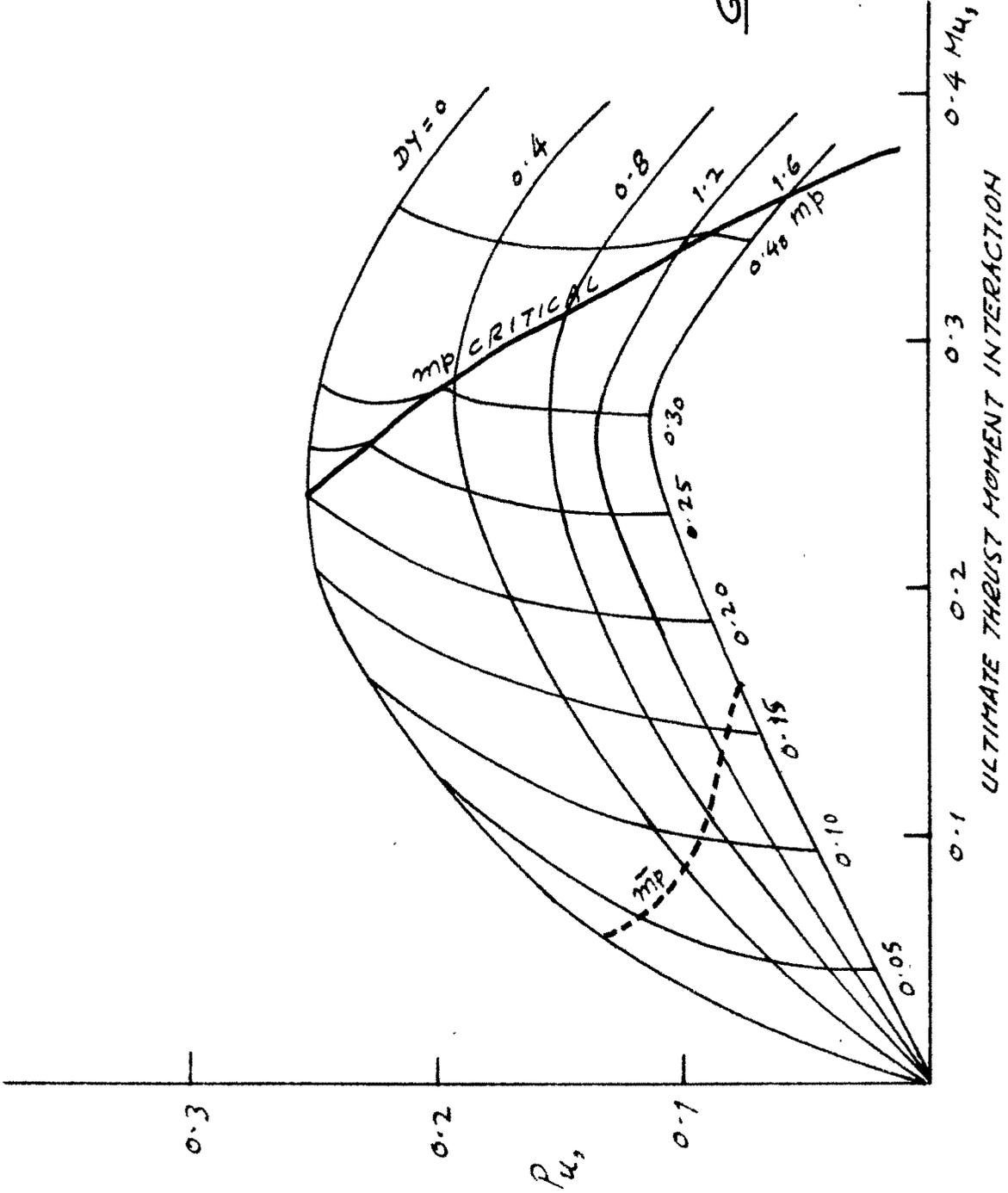
0.4

0.8

1.2

1.6

mp

mp CRITICAL

$\overline{mp}$

0.40

0.30

0.25

0.20

0.15

0.10

0.05

0.0

0.3

0.2

0.1

P_u,

0.1   0.2   0.3   0.4 M_u,

ULTIMATE THRUST MOMENT INTERACTION

182

GRAPH - 13

f = 0·25
z = 0·5
N = 1·0
D_t = 0·8

ULTIMATE THRUST MOMENT INTERACTION

183

GRAPH - 14

$f = 0.25$
$z = 0.5$
$N = 1.0$
$D_{+} = 1.2$

ULTIMATE THRUST MOMENT INTERACTION

Mu,

Pu,

GRAPH-15

$f = 0.25$
$z = 0.5$
$N = 1.1$
$D_t = 0$

ULTIMATE THRUST MOMENT INTERACTION

185

GRAPH – 16

$f = 0.25$
$z = 0.5$
$N = 1.1$
$D_4 = 0.4$

ULTIMATE THRUST MOMENT INTERACTION

Mu_3

Pu_3

$DY=0$

mp CRITICAL

$\overline{mp}$

186
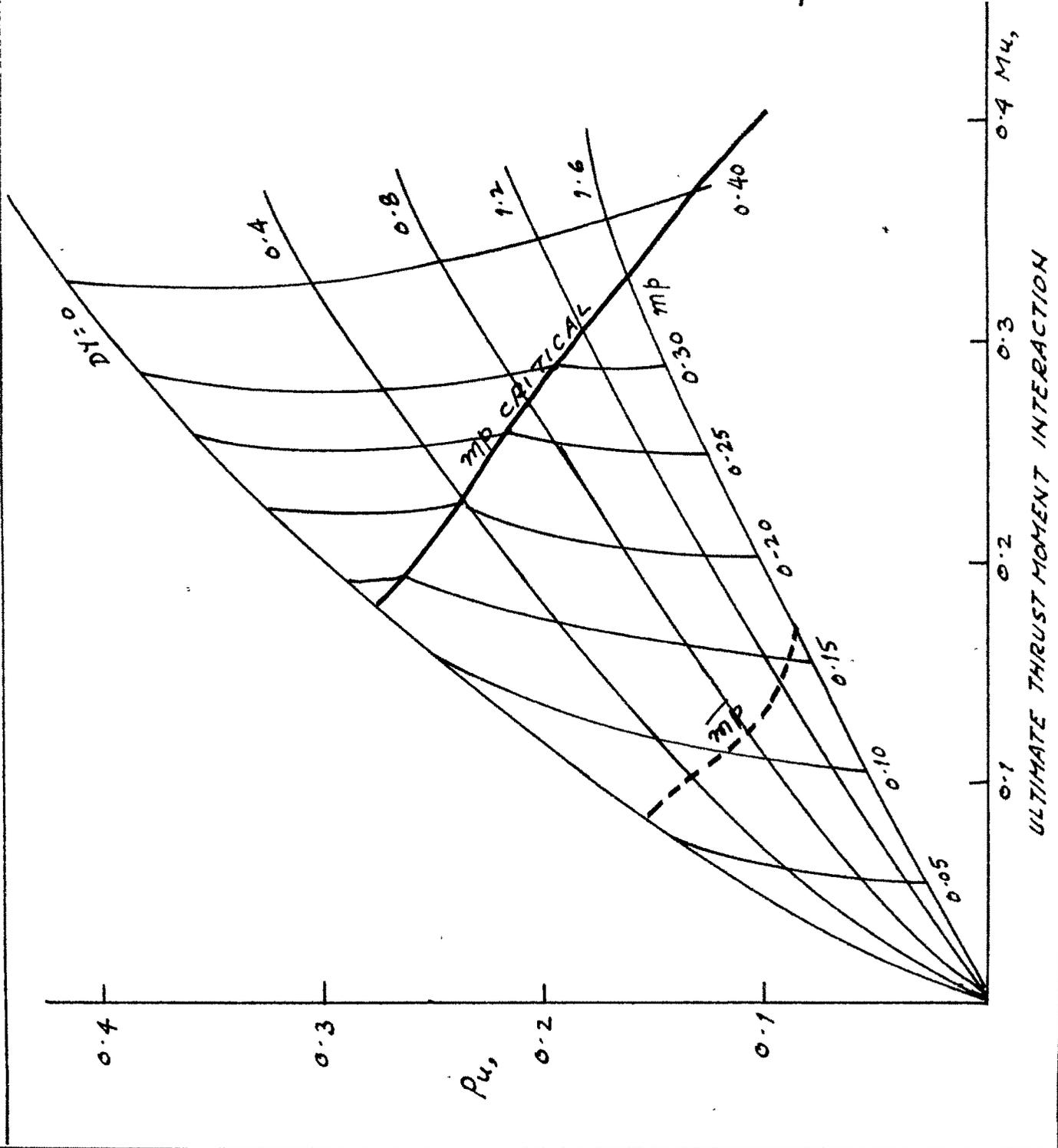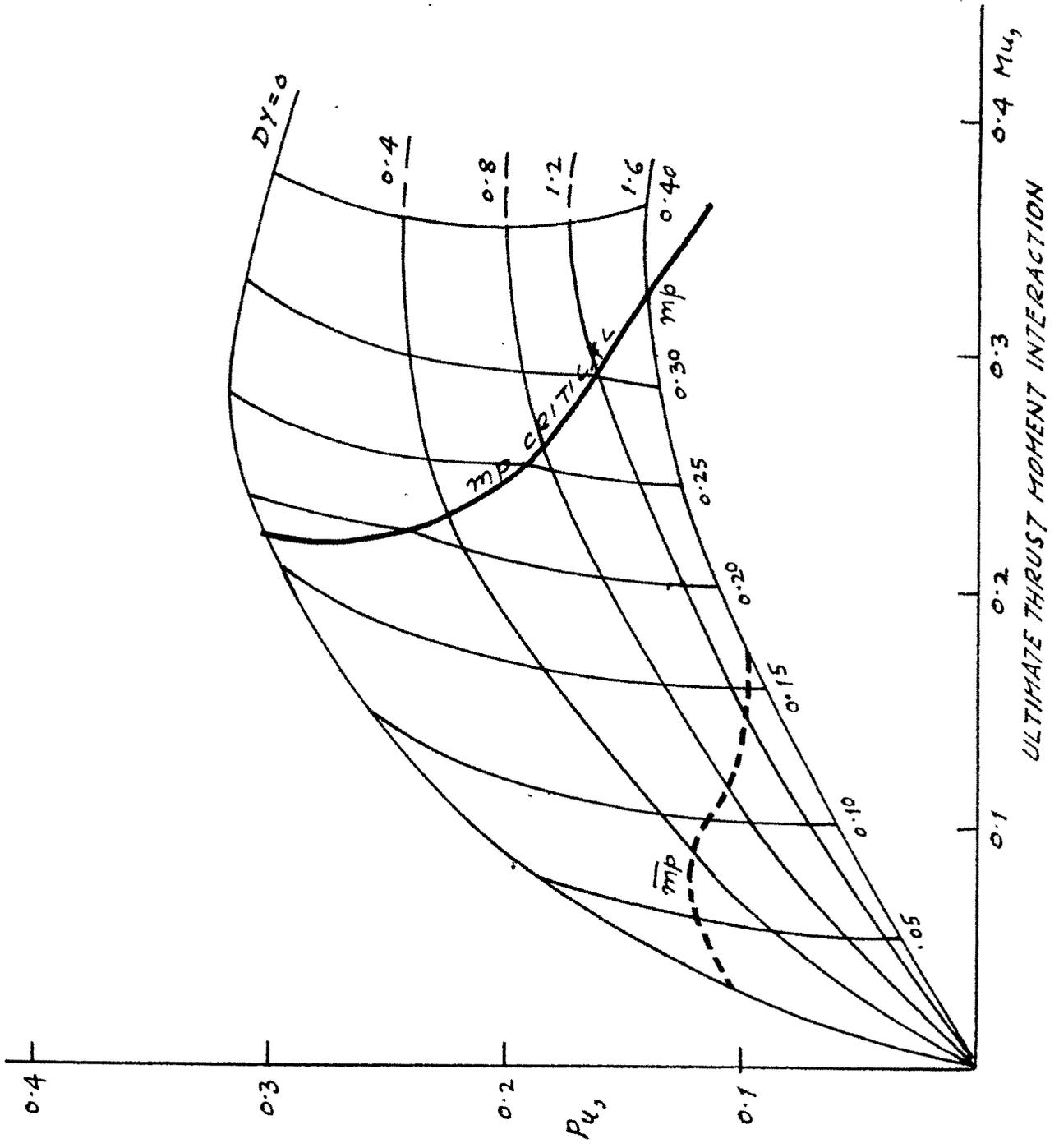
GRAPH - 17

$f = 0.25$
$z = 0.5$
$N = 1.1$
$D_x = 0.8$

ULTIMATE THRUST MOMENT INTERACTION

P_u,

M_u,

187

GRAPH-18

$f = 0.25$
$z = 0.5$
$N = 1.1$
$D_4 = 1.2$

ULTIMATE THRUST MOMENT INTERACTION

$Pu,$

$Mu,$

$DY = 0$

0.4

mp CRITICAL

0.8

1.2

1.6

0.20 mp

0.15

0.10

0.05

mp

0.3

0.2

0.1

0.1

0.2

0.3

185

GRAPH - 19

$f = 0.25$
$z = 1.0$
$N = 0.9$
$D_x = 0$

ULTIMATE THRUST MOMENT INTERACTION

$P_u,$ $M_u,$
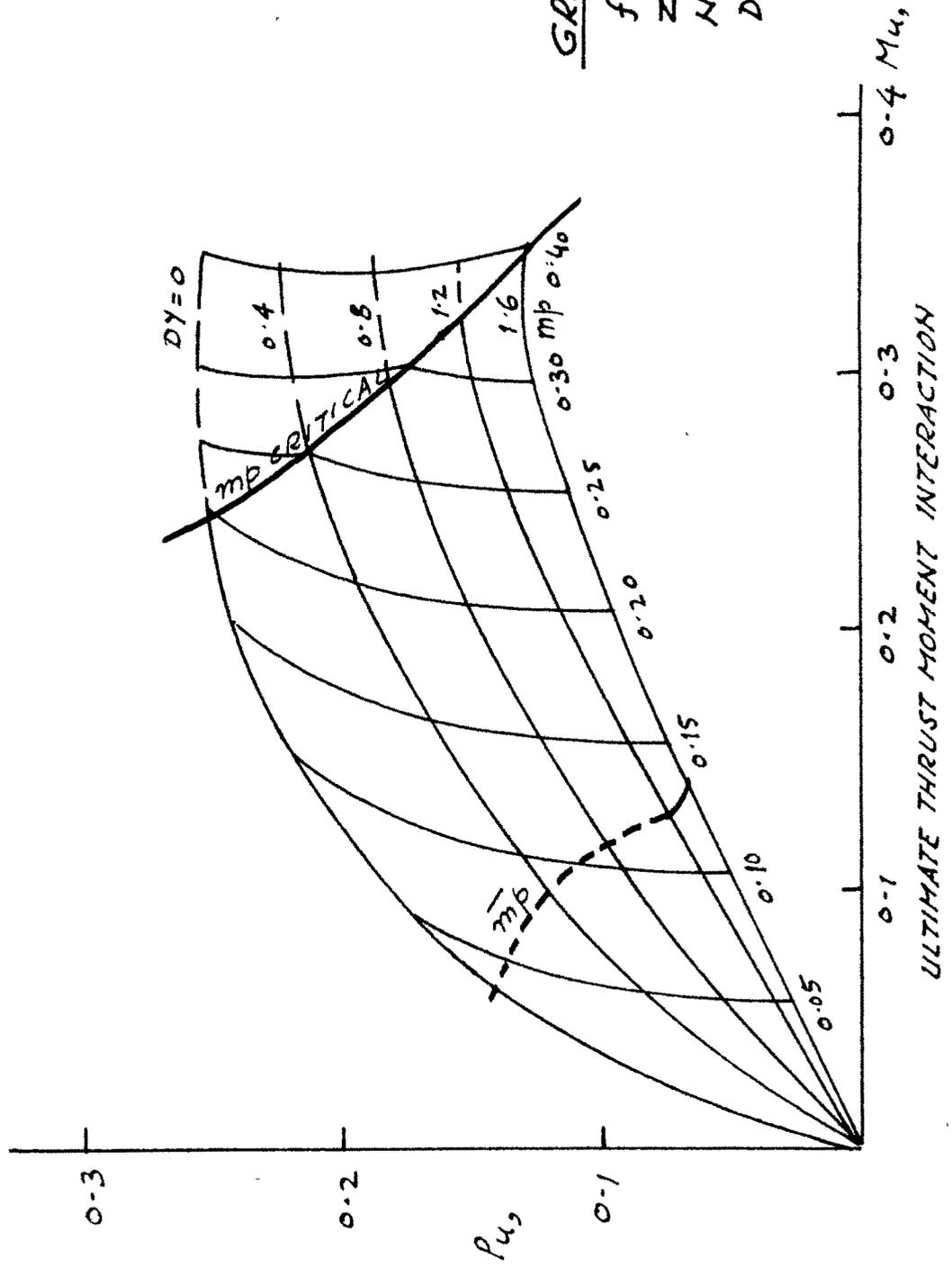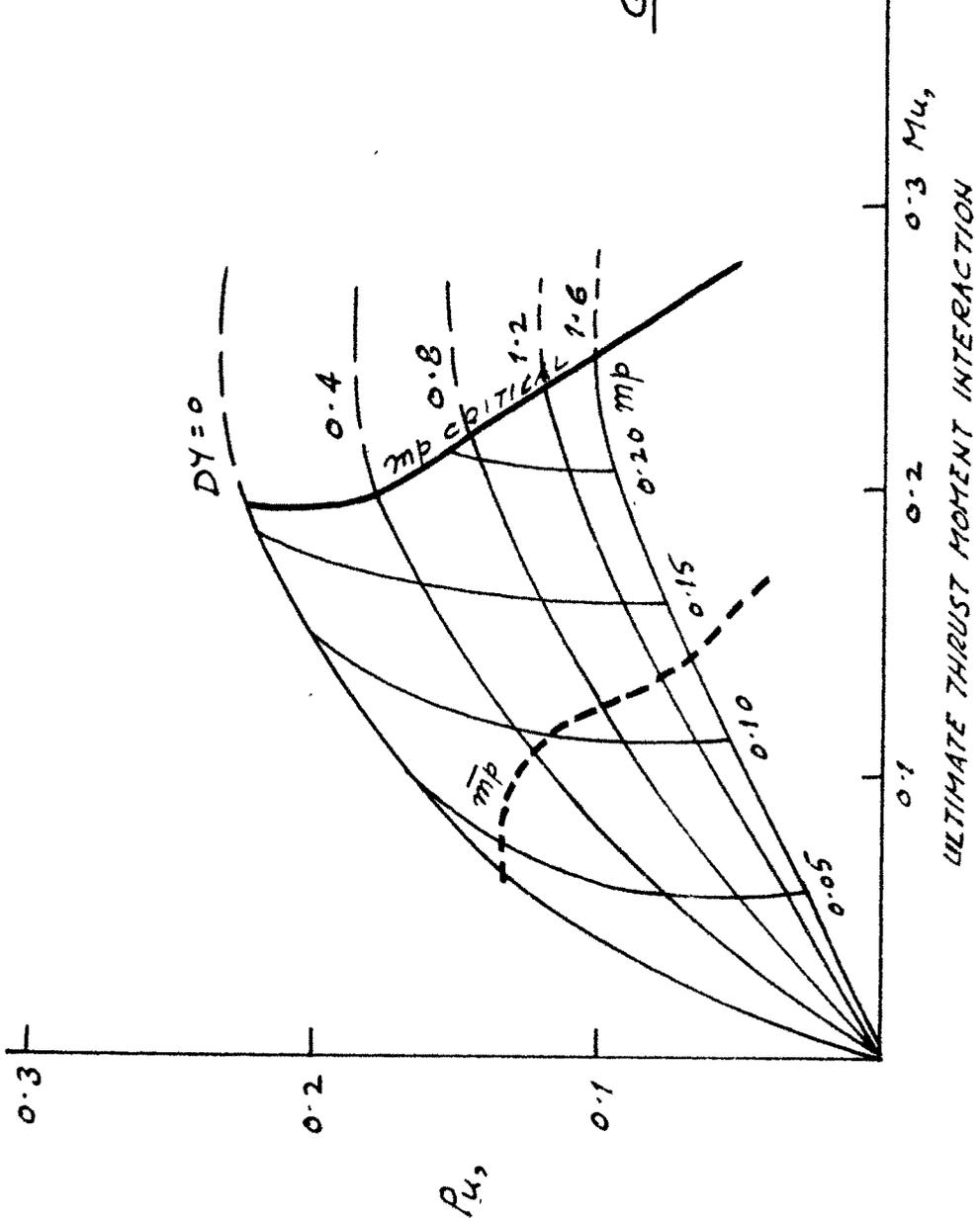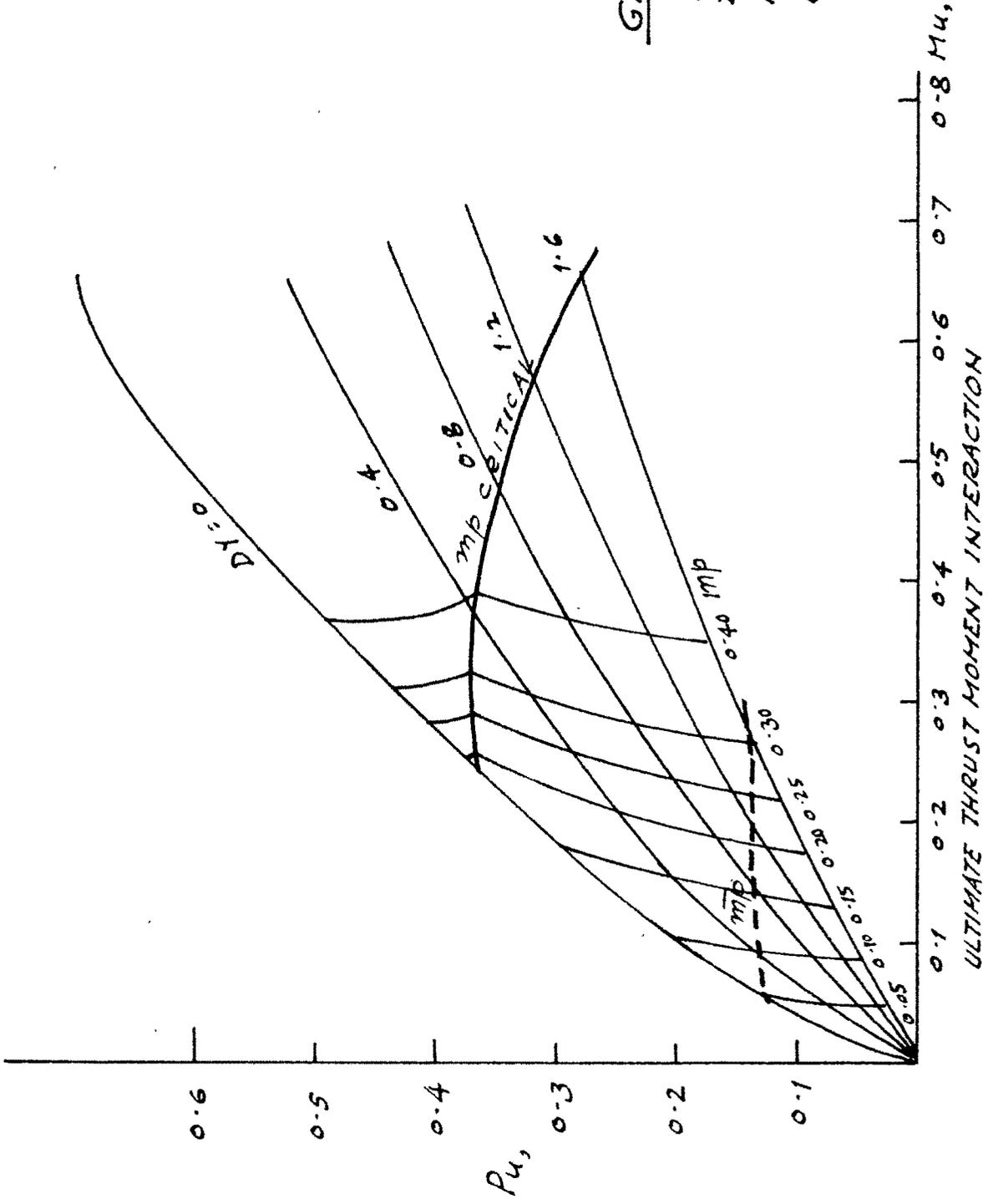
GRAPH - 20

$f = 0.25$
$Z = 1.0$
$N = 0.9$
$D_x = 0.4$

ULTIMATE THRUST MOMENT INTERACTION

Mu_s

Pu_s

$DY = 0$

0.4

mp CRITICAL

0.8

1.2

1.6

mp

0.46

0.30

0.25

0.20

0.15

0.10

0.05

mu
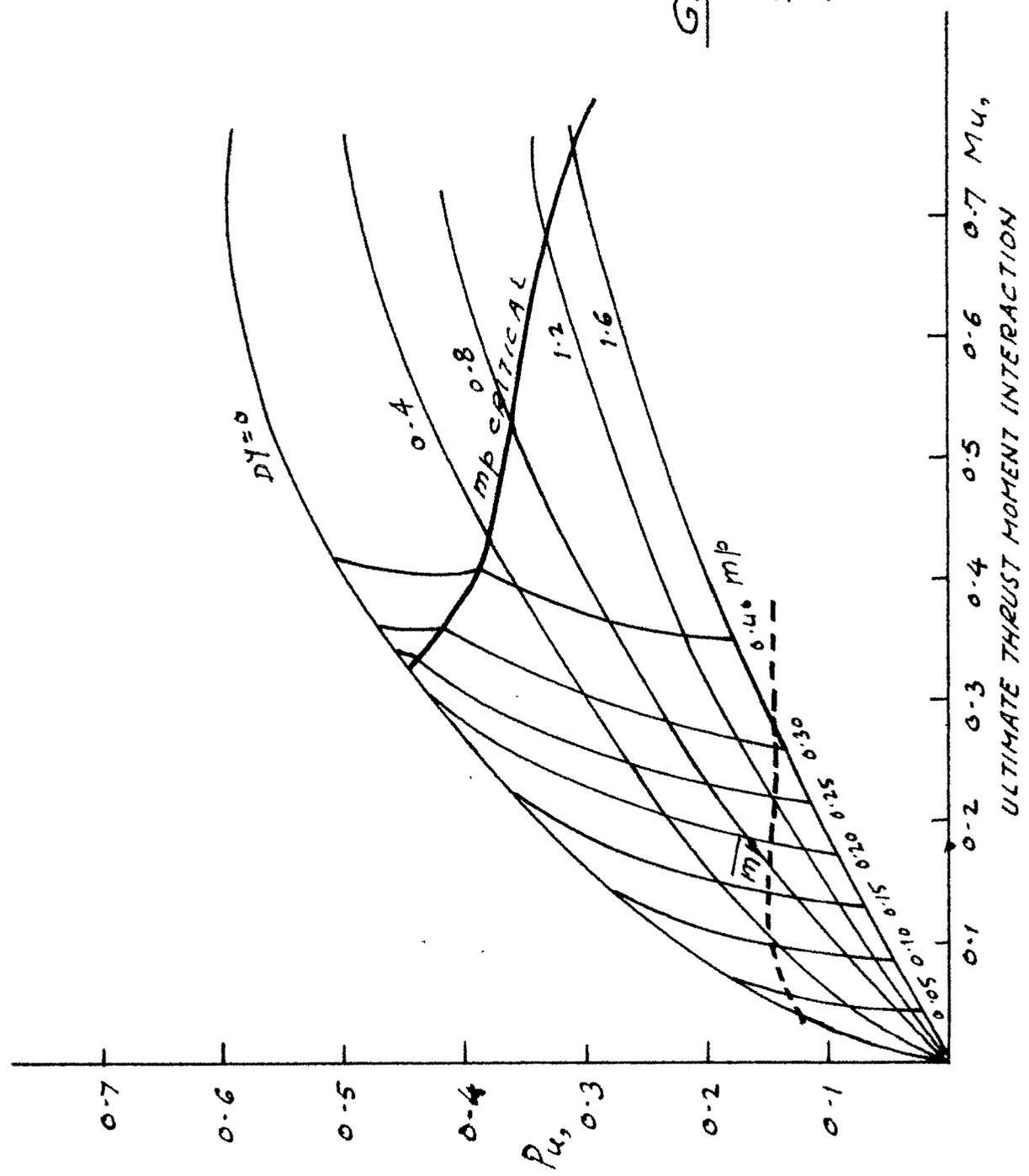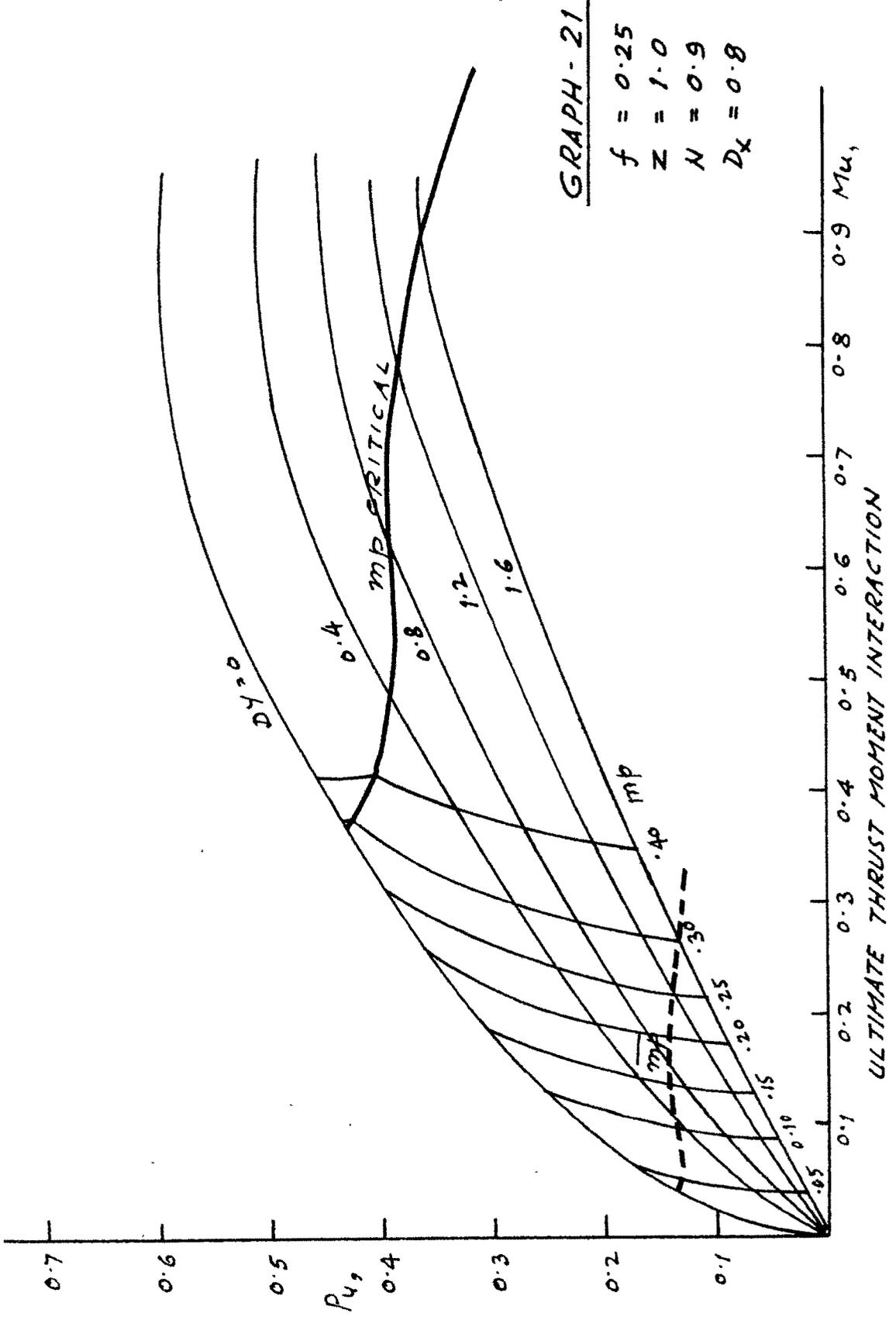
GRAPH - 21

$f = 0.25$
$z = 1.0$
$N = 0.9$
$D_x = 0.8$

ULTIMATE THRUST MOMENT INTERACTION

$Mu,$

$Pu,$

$D_y = 0$

0.4

0.8

1.2

1.6

MP CRITICAL

mp

.40

.30

.25

.20

.15

.10

.05

0.10

m_u

GRAPH-22

$f = 0.25$
$Z = 1.0$
$N = 0.9$
$D_x = 1.2$

ULTIMATE THRUST MOMENT INTERACTION

P_u,

0.5 Mu,

DY = 0

MP CRITICAL

0.4

0.8

1.2

1.6

0.40 MP

0.30

0.25

0.20

0.15

0.10

0.05
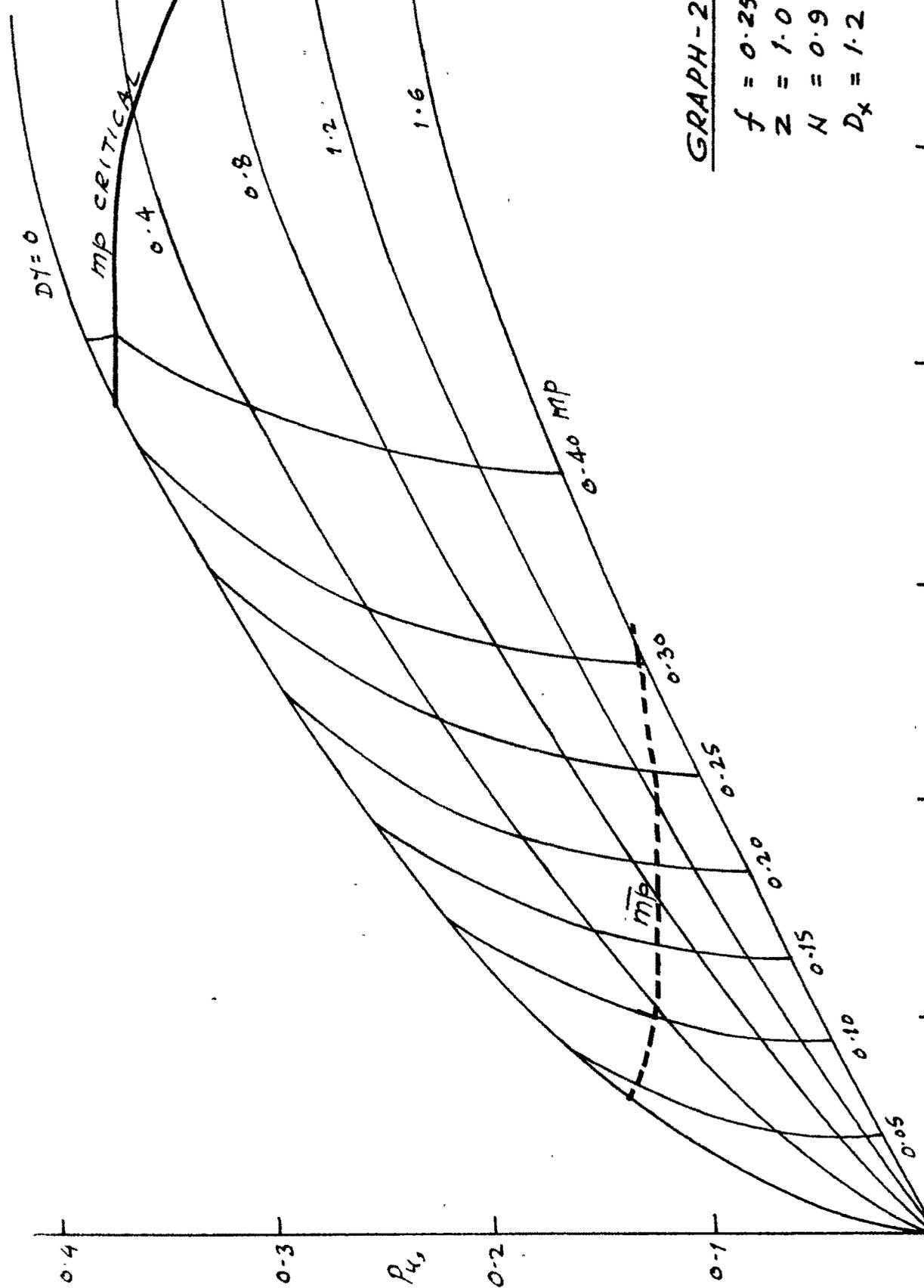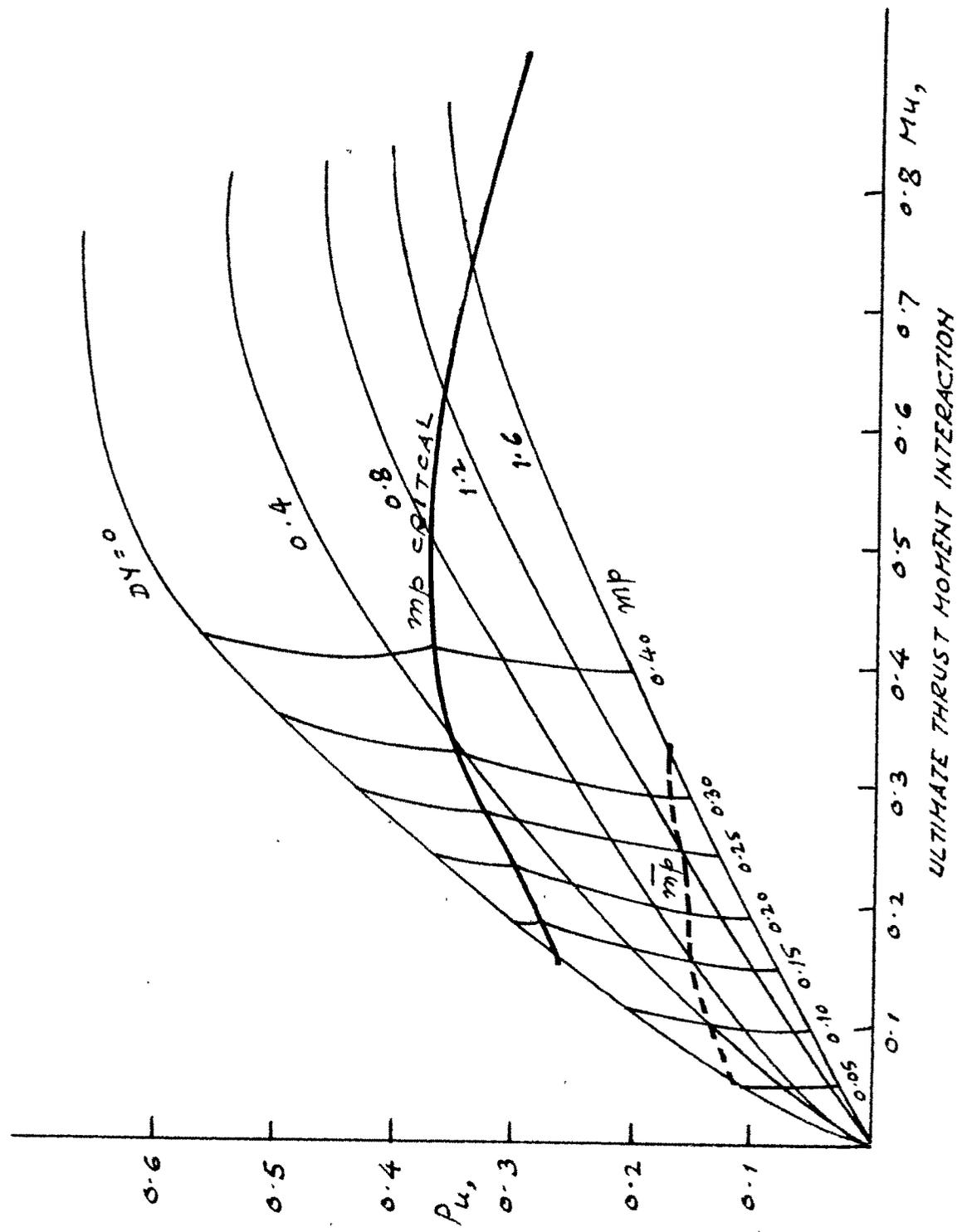
$\overline{mp}$

0.4

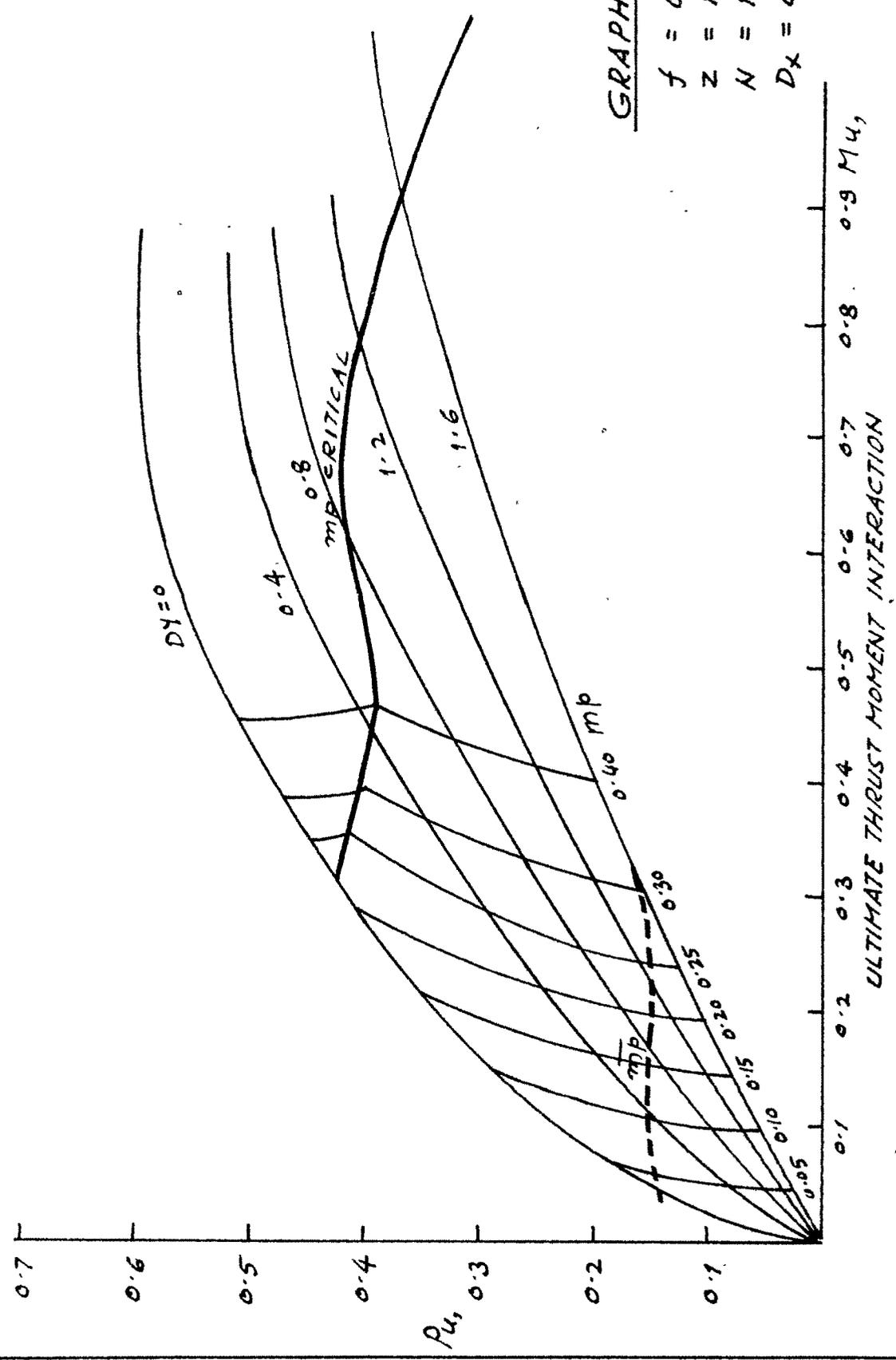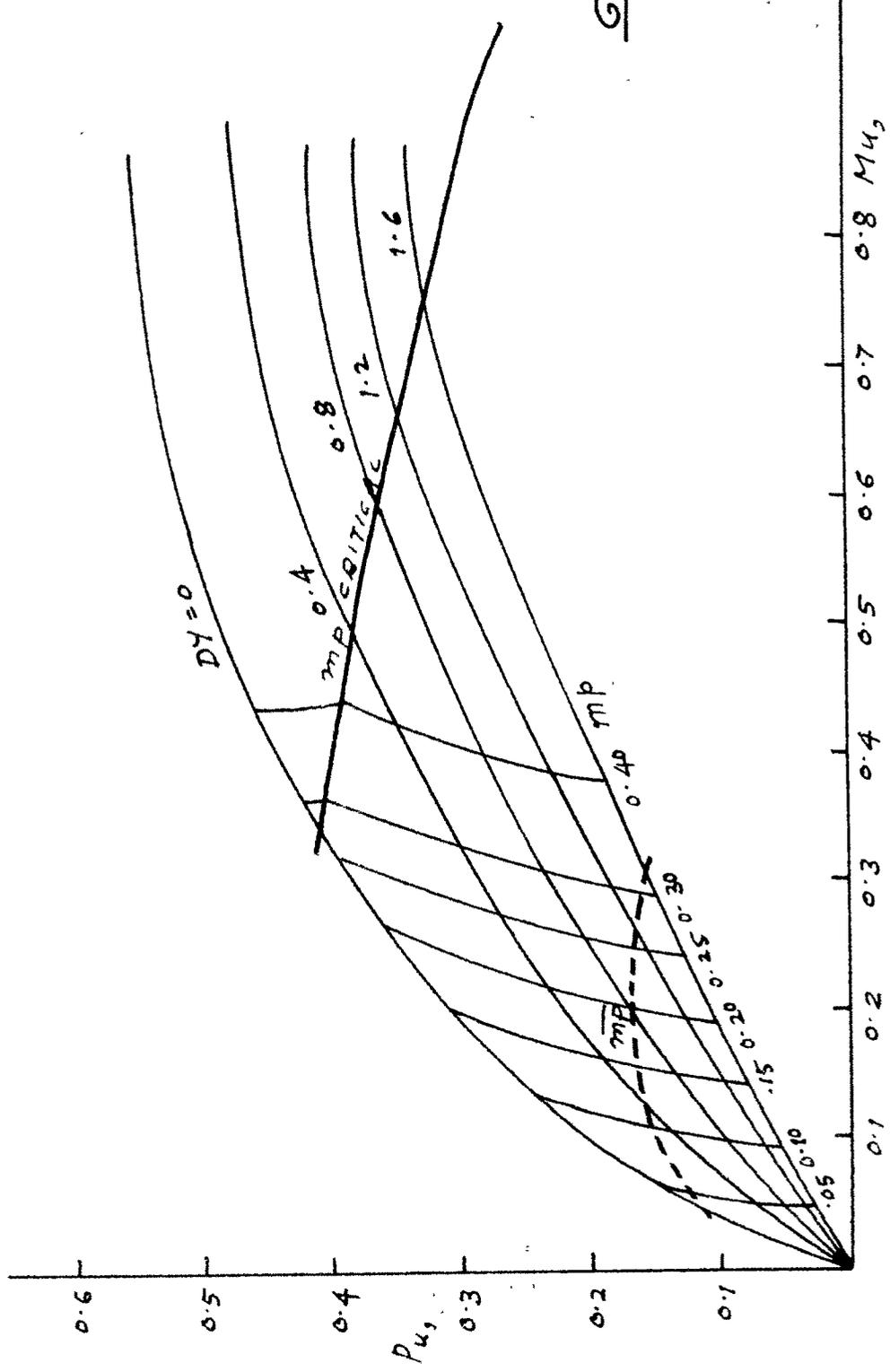0.3

0.2

0.1

0.1

0.2

0.3

0.4

192

GRAPH - 23

$f = 0.25$
$Z = 1.0$
$N = 1.0$
$D_x = 0$

ULTIMATE THRUST MOMENT INTERACTION
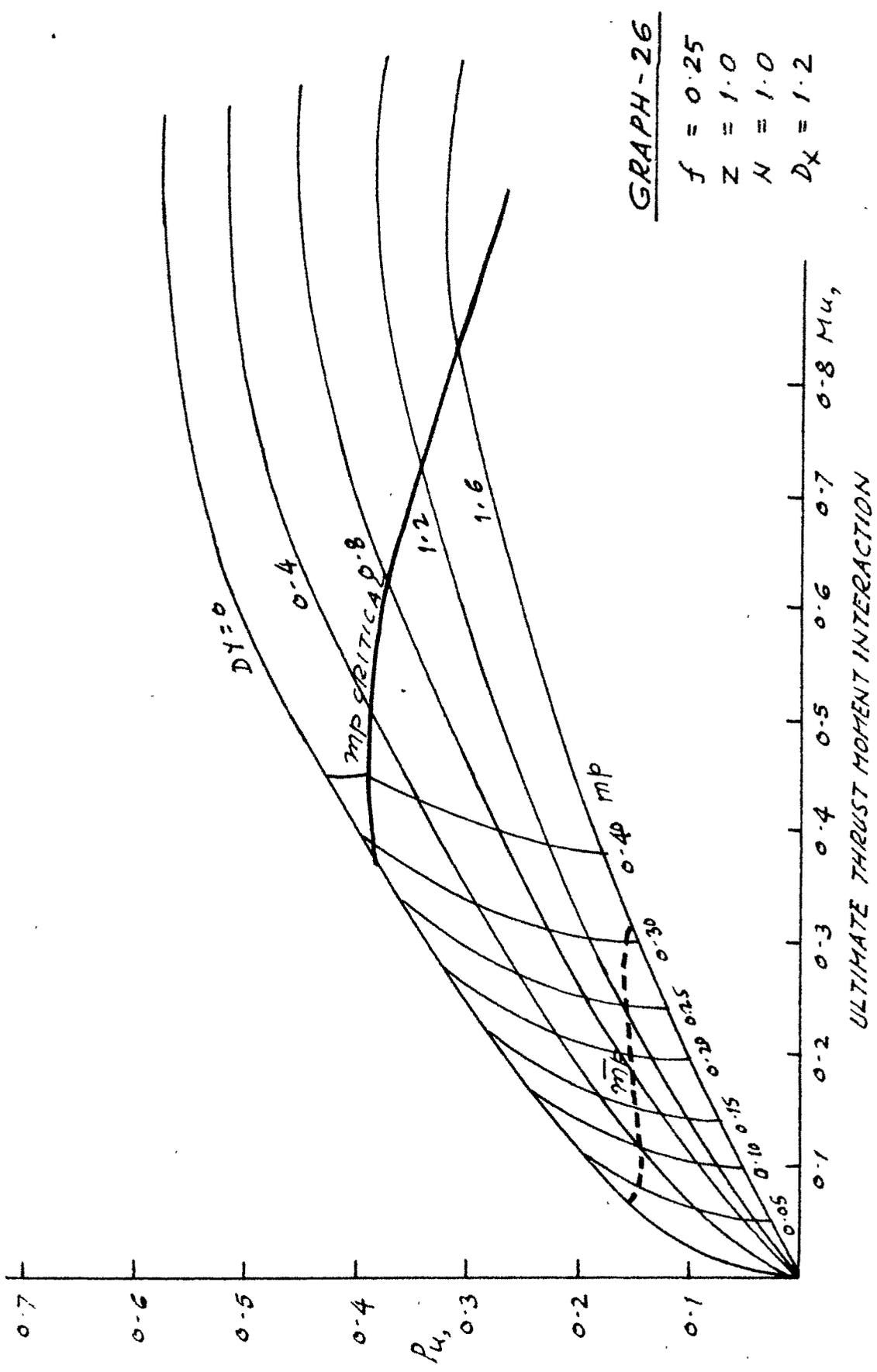
GRAPH - 24

$f = 0.25$
$z = 1.0$
$N = 1.0$
$D_x = 0.4$

ULTIMATE THRUST MOMENT INTERACTION

P_u,

M_u,

DY=0

0.4

0.8

mp CRITICAL

1.2

1.6

mp

0.40

0.30

0.25

0.20

0.15

0.10

0.05

0.00

$\overline{m_p}$

GRAPH-25

$f = 0.25$
$z = 0.1.0$
$N = 1.0$
$D_x = 0.8$

ULTIMATE THRUST MOMENT INTERACTION

Mu_3

Pu_3

DY = 0

mp CRITICAL

mp

195

GRAPH-26

$f = 0.25$
$z = 1.0$
$N = 1.0$
$D_x = 1.2$

ULTIMATE THRUST MOMENT INTERACTION

Mu,

Pu,

$Dy = 0$

mp CRITICAL

$\overline{mp}$

mp

GRAPH-27

$f = 0.25$
$z = 1.0$
$H = 1.1$
$D_x = 0$

ULTIMATE THRUST MOMENT INTERACTION

CRITICAL

m_p CRITICAL

m_p

$\overline{m_p}$

$D_x = 0$

0.4
0.8
1.2
1.6

0.40
0.30
0.25
0.20
0.15
0.10
0.05

0.1 0.2 0.3 0.4 0.5 0.6 0.7 M_u,

P_u, 0.1 0.2 0.3 0.4 0.5 0.6

197

GRAPH-28

$f = 0.28$
$Z = 1.0$
$N = 1.1$
$D_x = 0.4$

ULTIMATE THRUST MOMENT INTERACTION

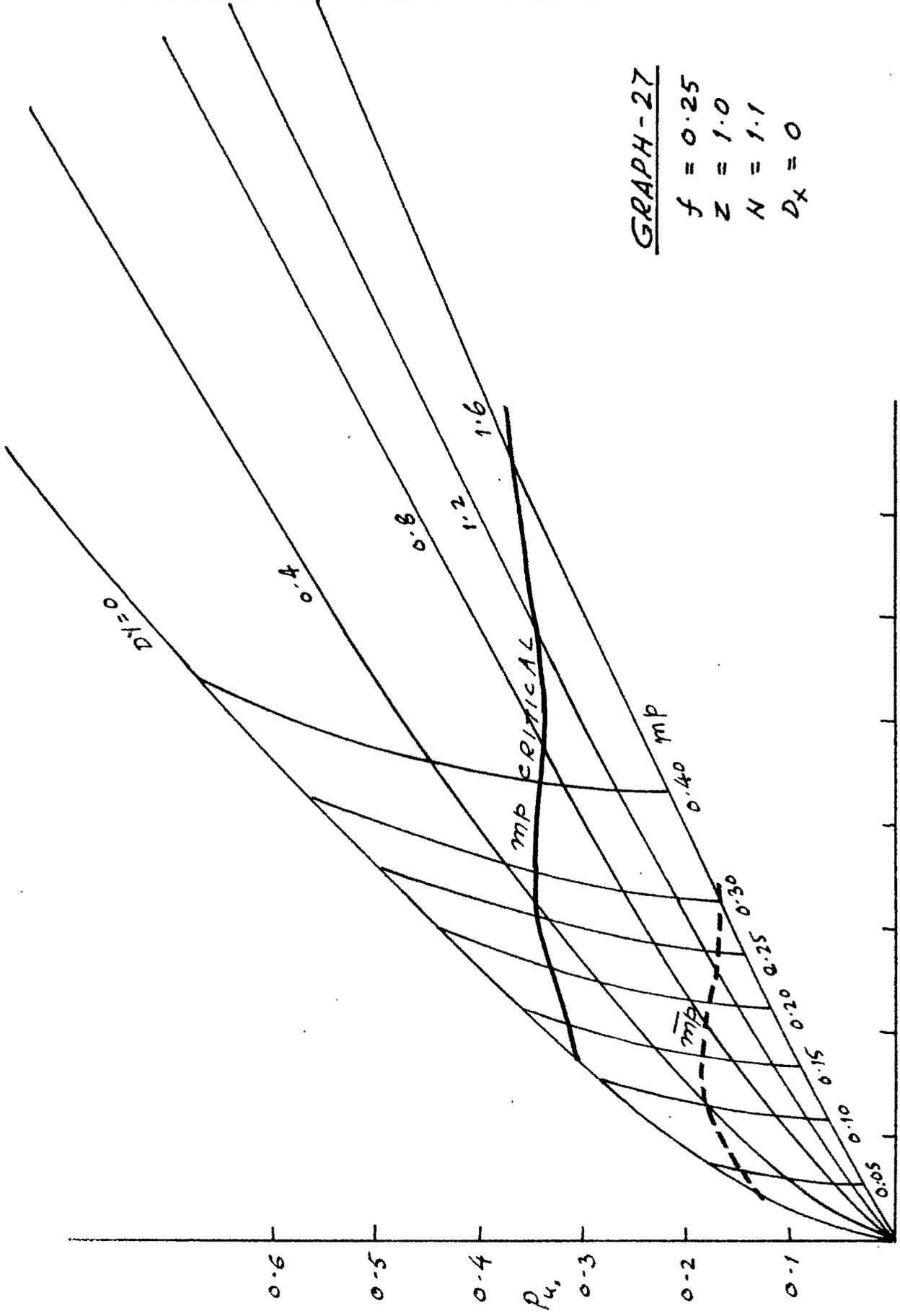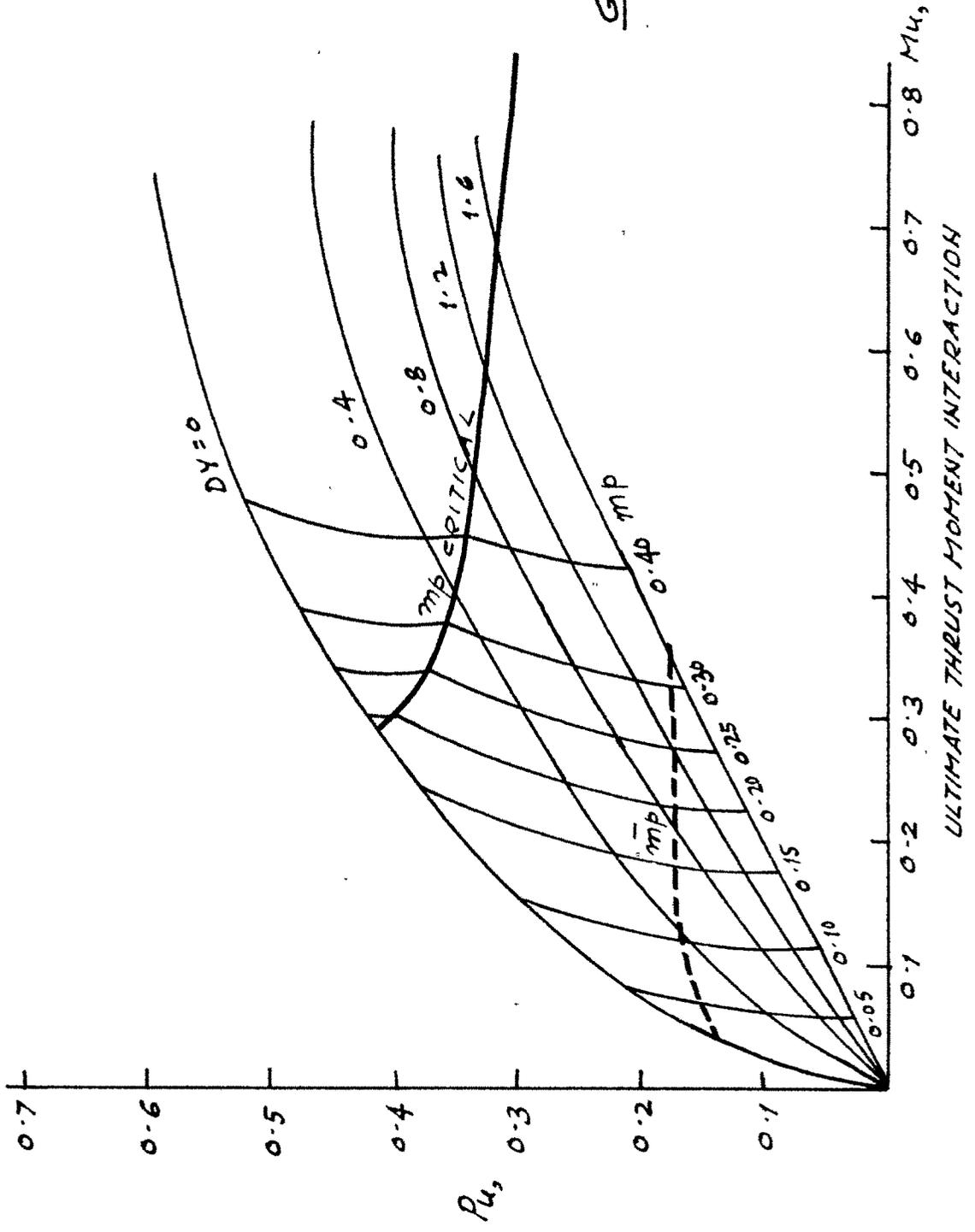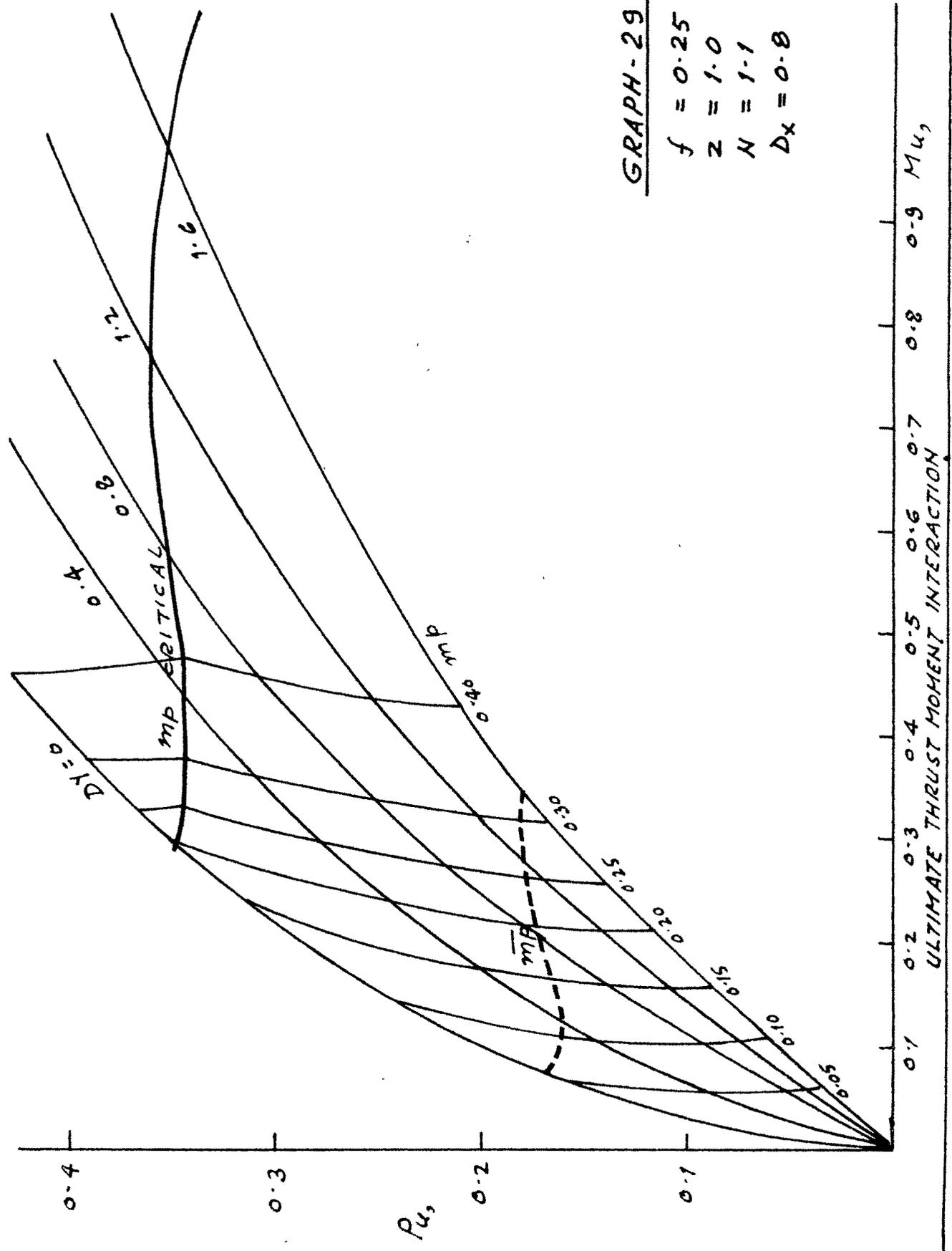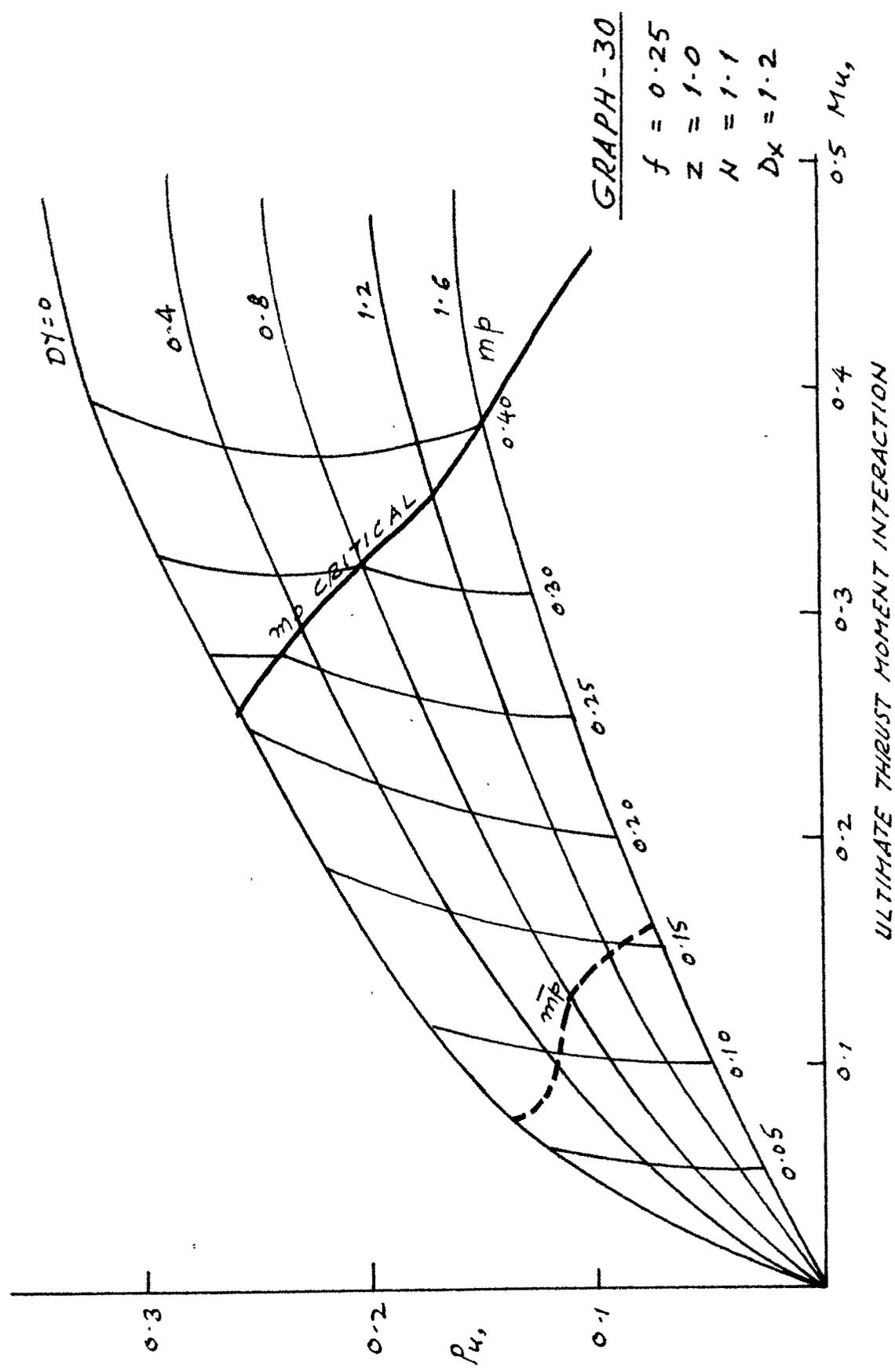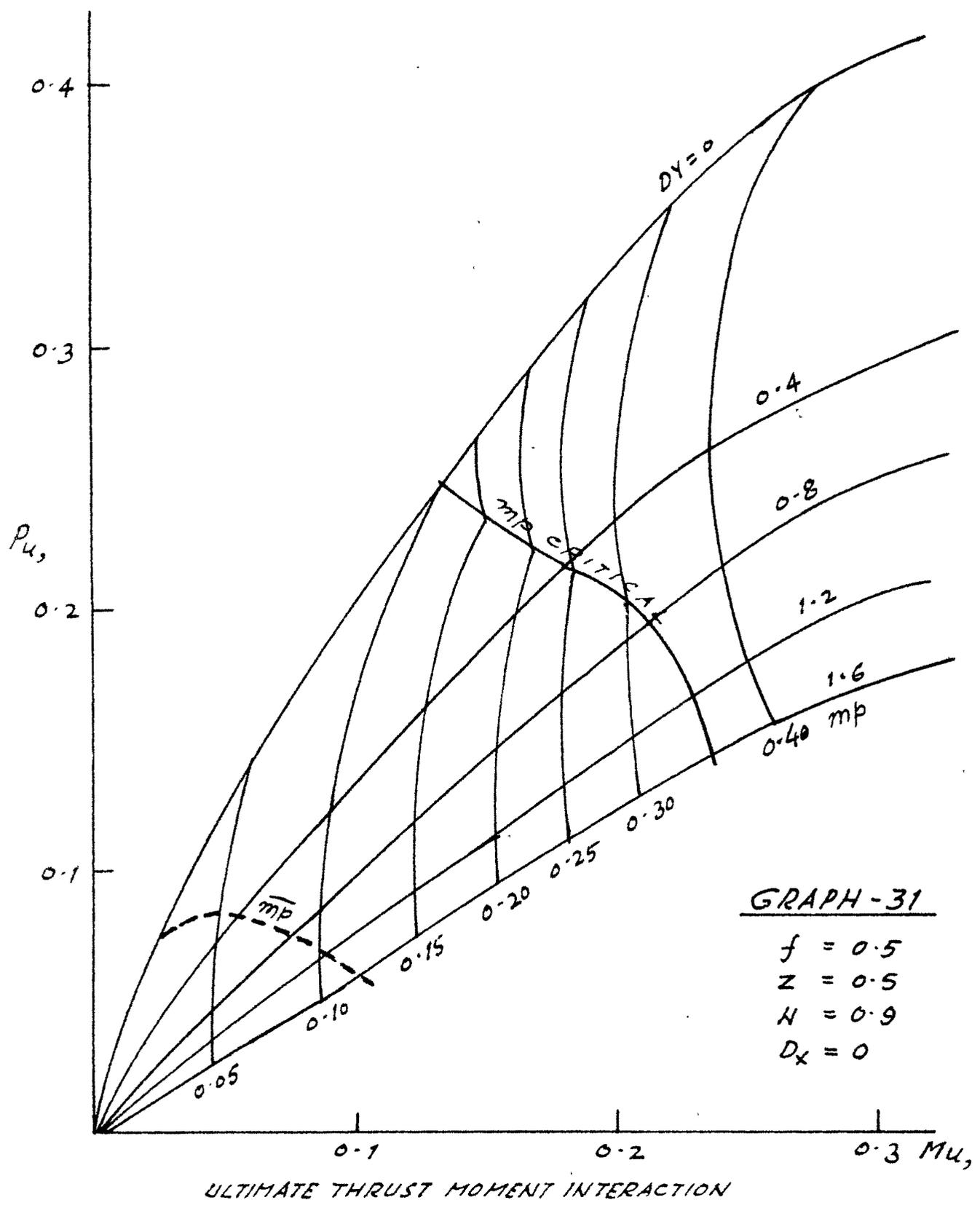198.

GRAPH-29

$f = 0.25$
$z = 1.0$
$N = 1.1$
$D_x = 0.8$

ULTIMATE THRUST MOMENT INTERACTION

Mu,

Pu,

$D_y = 0$

mp CRITICAL

$\overline{mp}$

mp

GRAPH-30

$f = 0.25$
$z = 1.0$
$H = 1.1$
$D_x = 1.2$

ULTIMATE THRUST MOMENT INTERACTION

$Mu,$

$Pu,$

$D_Y = 0$
0.4
0.8
1.2
1.6
mp
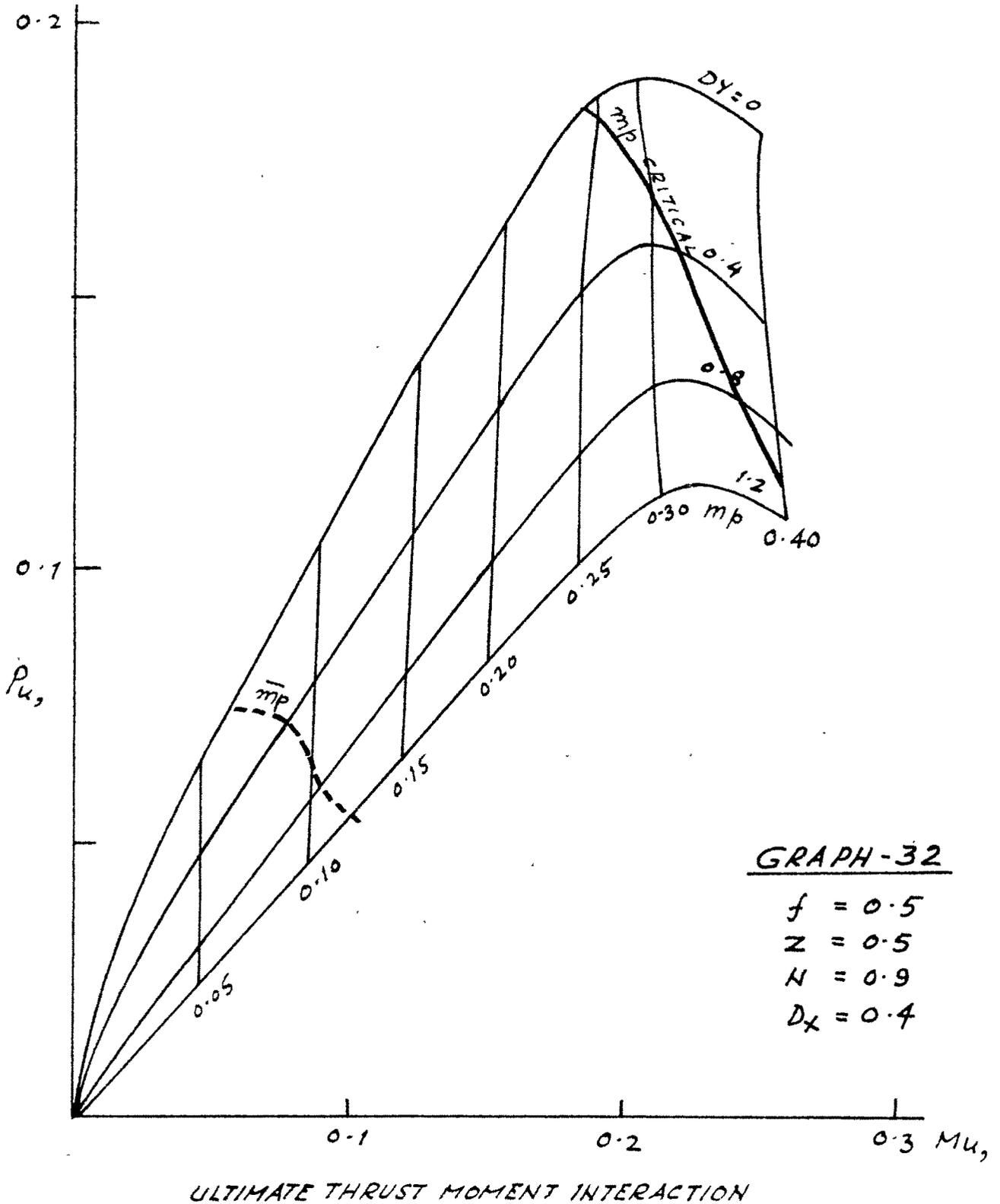
mp CRITICAL

$\overline{mp}$

200

201

GRAPH - 31

$f = 0.5$
$z = 0.5$
$N = 0.9$
$D_X = 0$

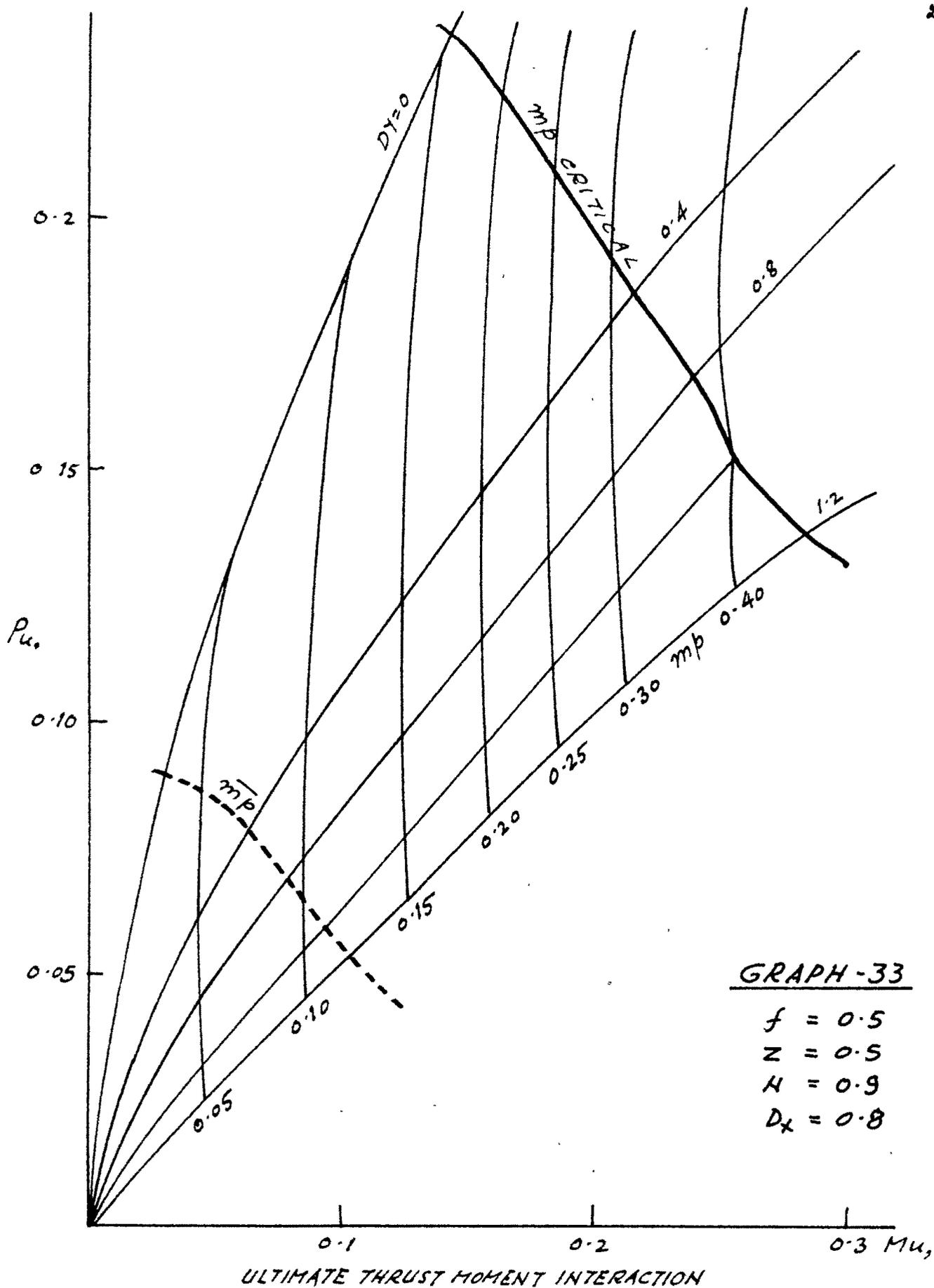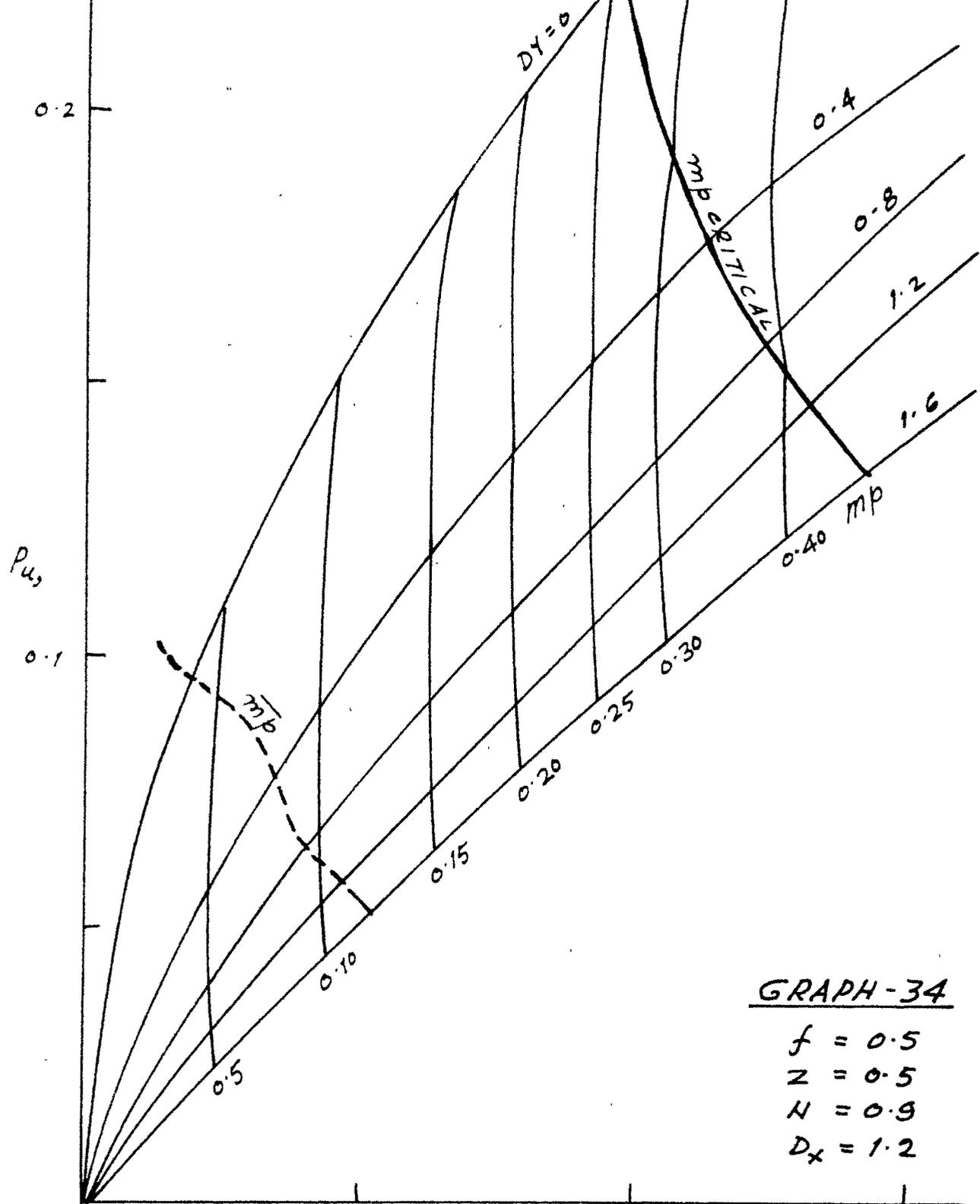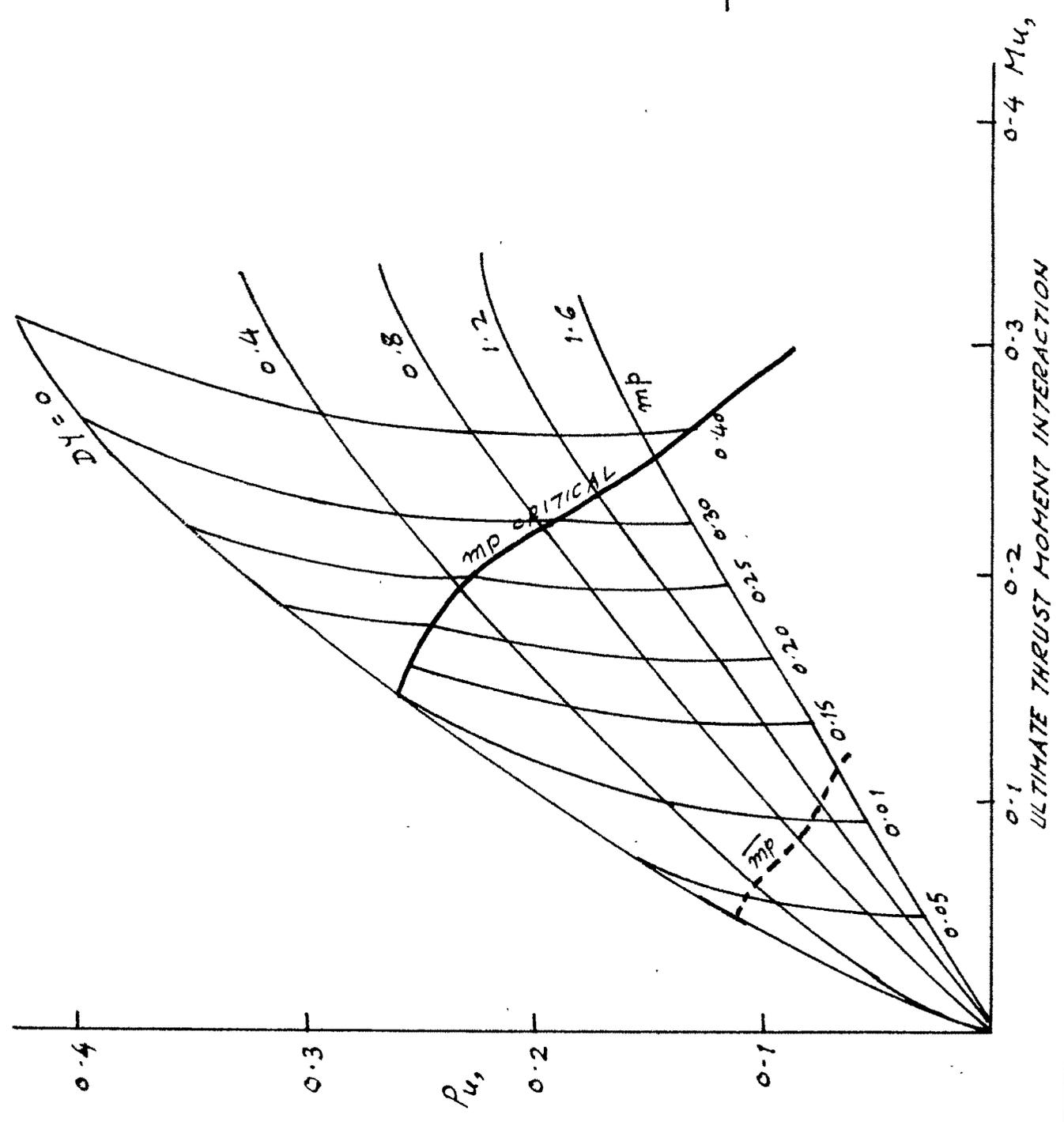ULTIMATE THRUST MOMENT INTERACTION

ULTIMATE THRUST MOMENT INTERACTION

GRAPH-32

$f = 0.5$
$z = 0.5$
$N = 0.9$
$D_x = 0.4$

ULTIMATE THRUST MOMENT INTERACTION

GRAPH - 33

$f = 0.5$
$z = 0.5$
$H = 0.9$
$D_x = 0.8$

203

P_u

M_u

$DY=0$

mp CRITICAL

0.4

0.8

1.2

mp 0.40

0.30

0.25

0.20

0.15

0.10

0.05

$\overline{mp}$

0.2

0.15

0.10

0.05

0.1

0.2

0.3

ULTIMATE THRUST MOMENT INTERACTION

GRAPH - 34

$f = 0.5$
$z = 0.5$
$N = 0.9$
$D_x = 1.2$

GRAPH - 35

$f = 0.5$
$Z = 0.5$
$N = 1.0$
$D_x = 0$

ULTIMATE THRUST MOMENT INTERACTION

GRAPH-36

$f = 0.5$
$z = 0.5$
$N = 1.0$
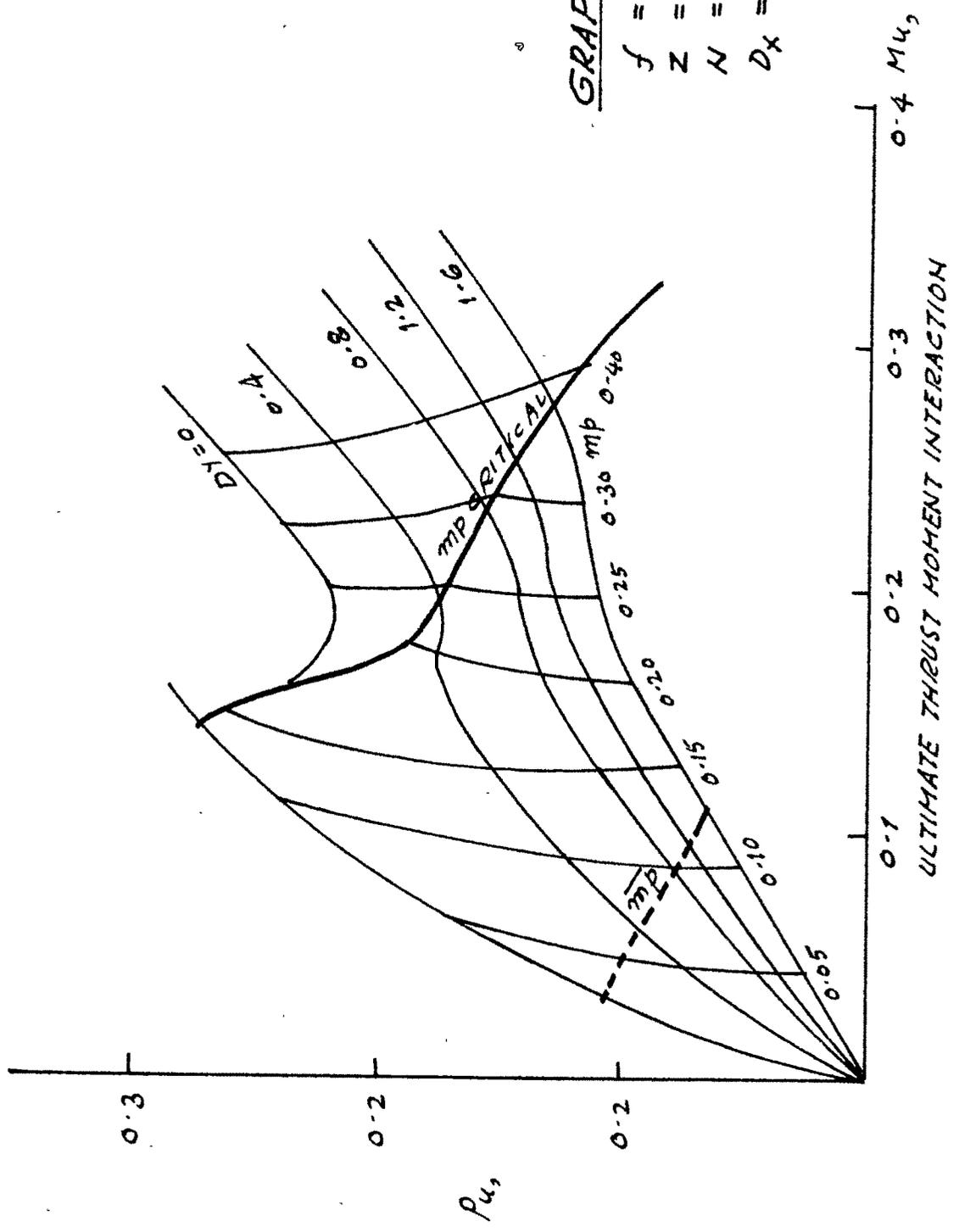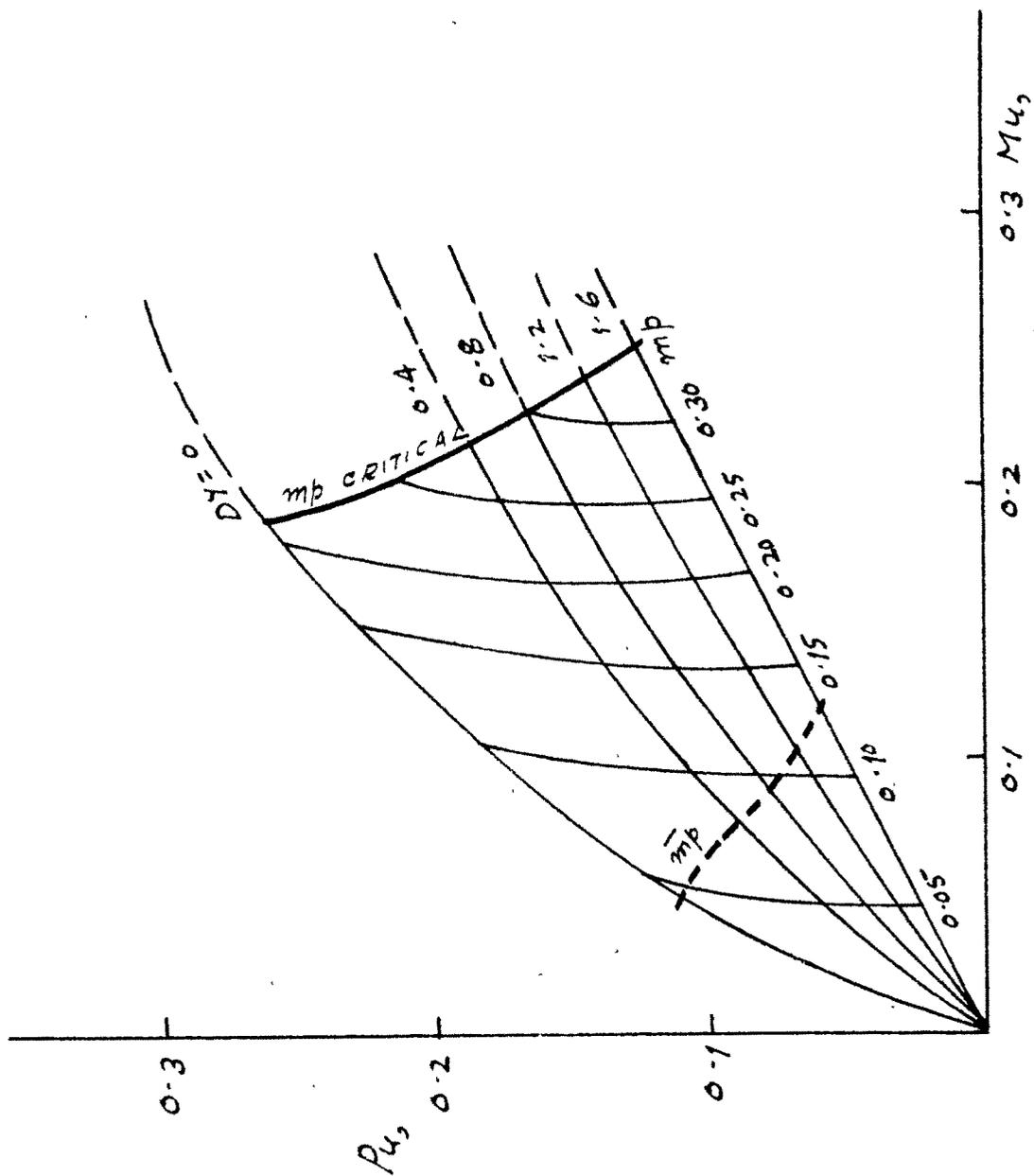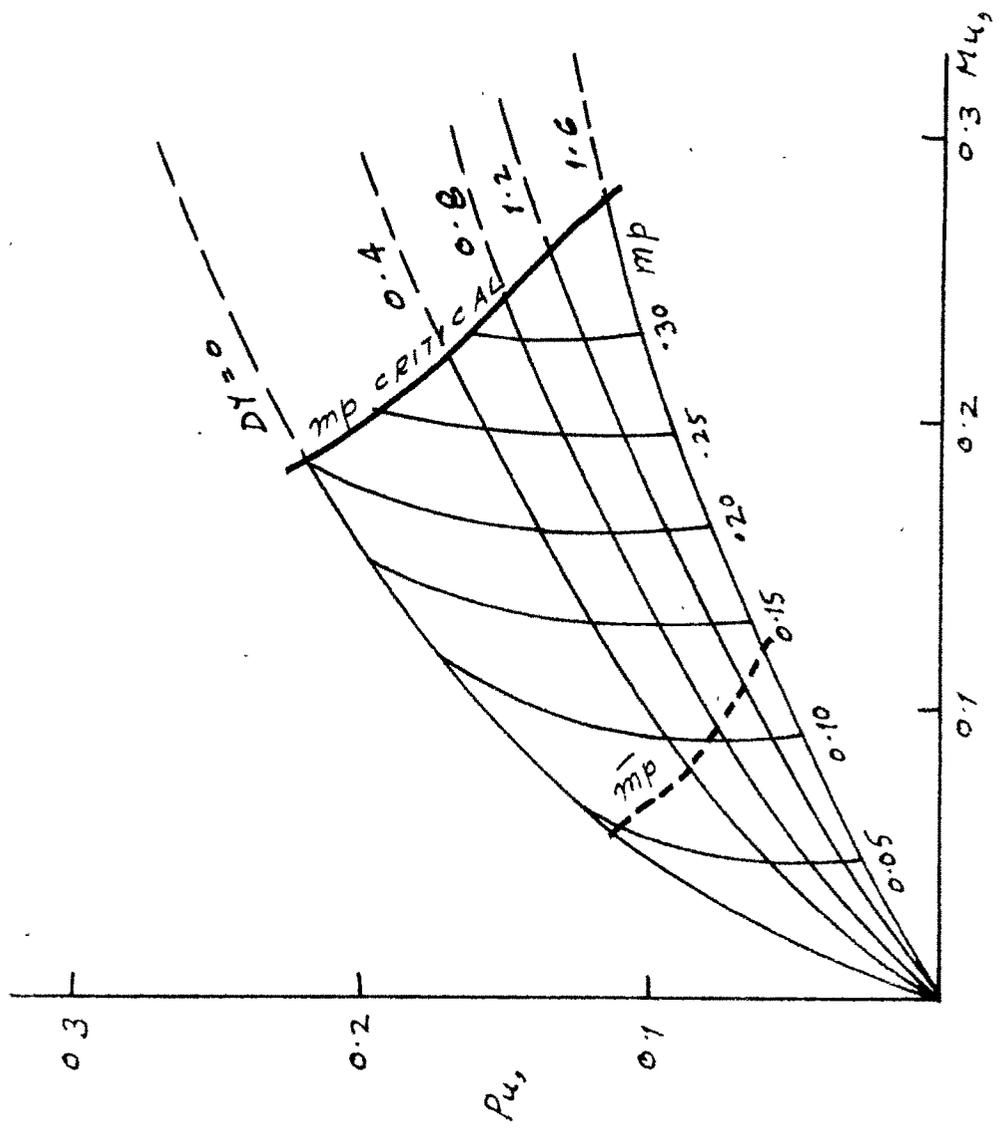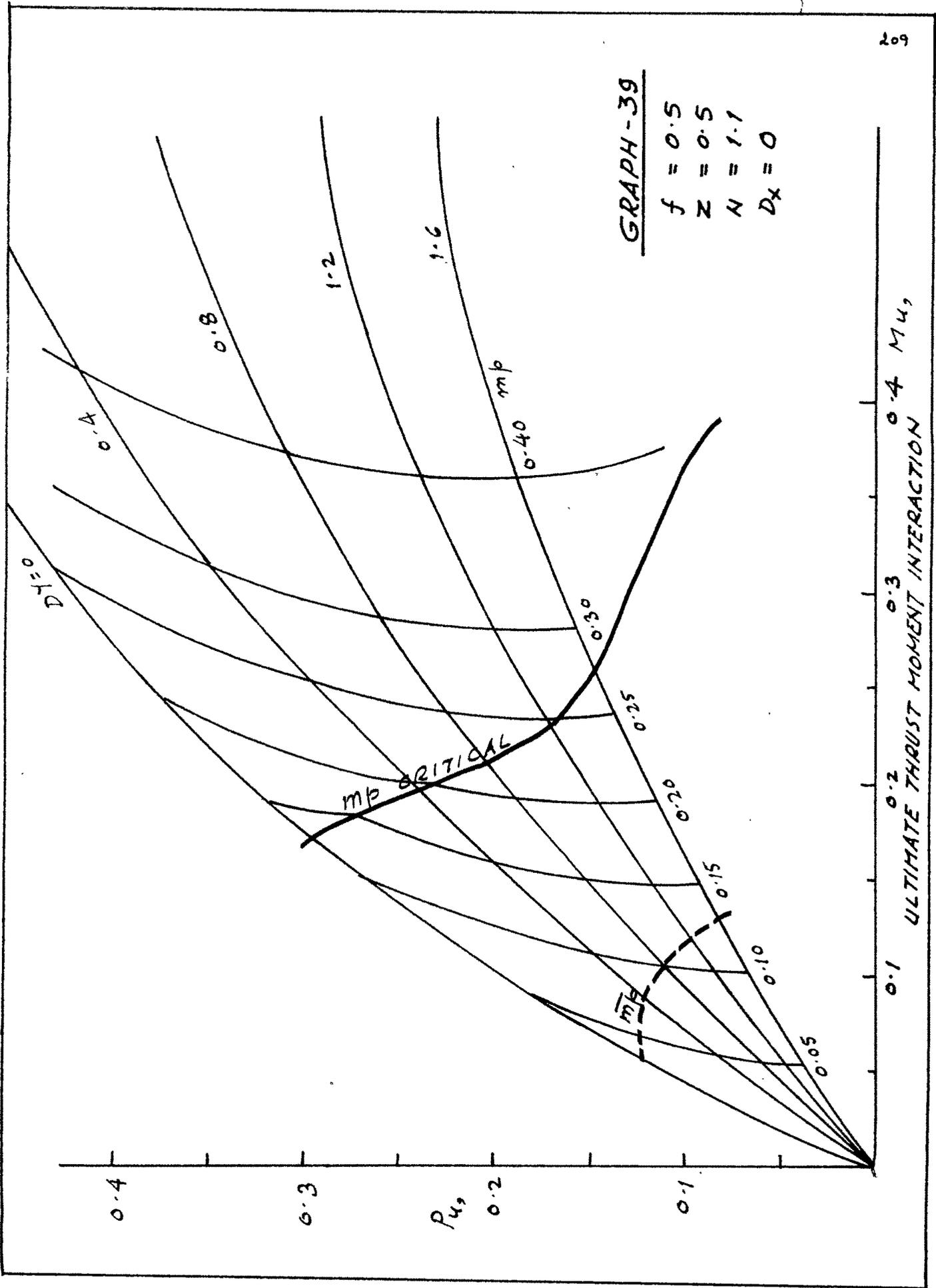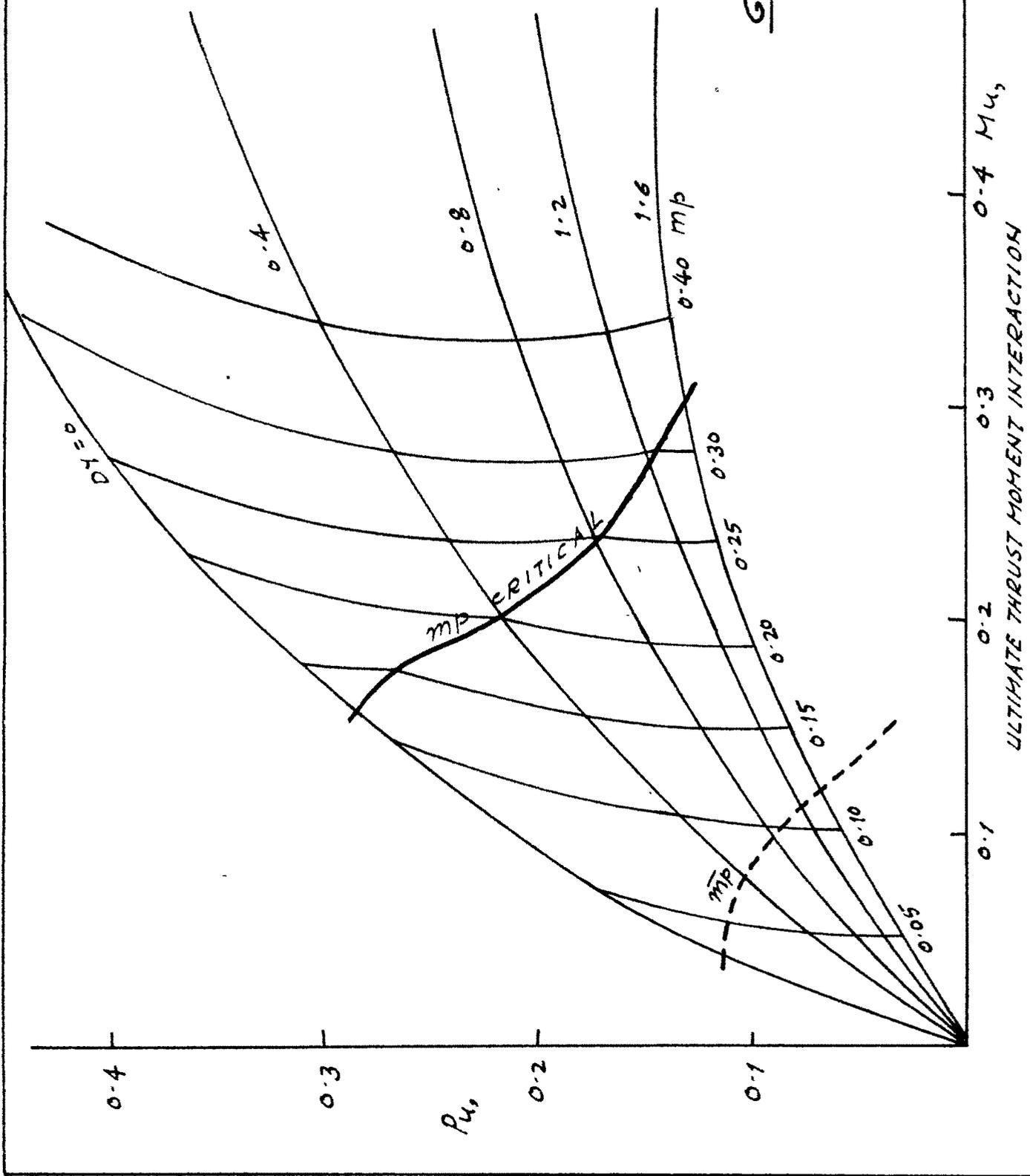$D_t = 0.4$

ULTIMATE THRUST MOMENT INTERACTION

Mu_3

P_{u_3}

0.3 0.2 0.2

0.1 0.2 0.3 0.4

$D = KD$

0.4
0.8
1.2
1.6

mp CRITICAL

mp

0.05 0.10 0.15 0.20 0.25 0.30 mp 0.40

206

GRAPH - 37

$f = 0.5$
$z = 0.5$
$N = 1.0$
$D_t = 0.8$

ULTIMATE THRUST MOMENT INTERACTION

$Mu,$

$Pu,$

ULTIMATE THRUST MOMENT INTERACTION

GRAPH-38

$f = 0.5$
$z = 0.5$
$N = 1.0$
$D_t = 1.2$

208

GRAPH - 39

$f = 0.5$
$z = 0.5$
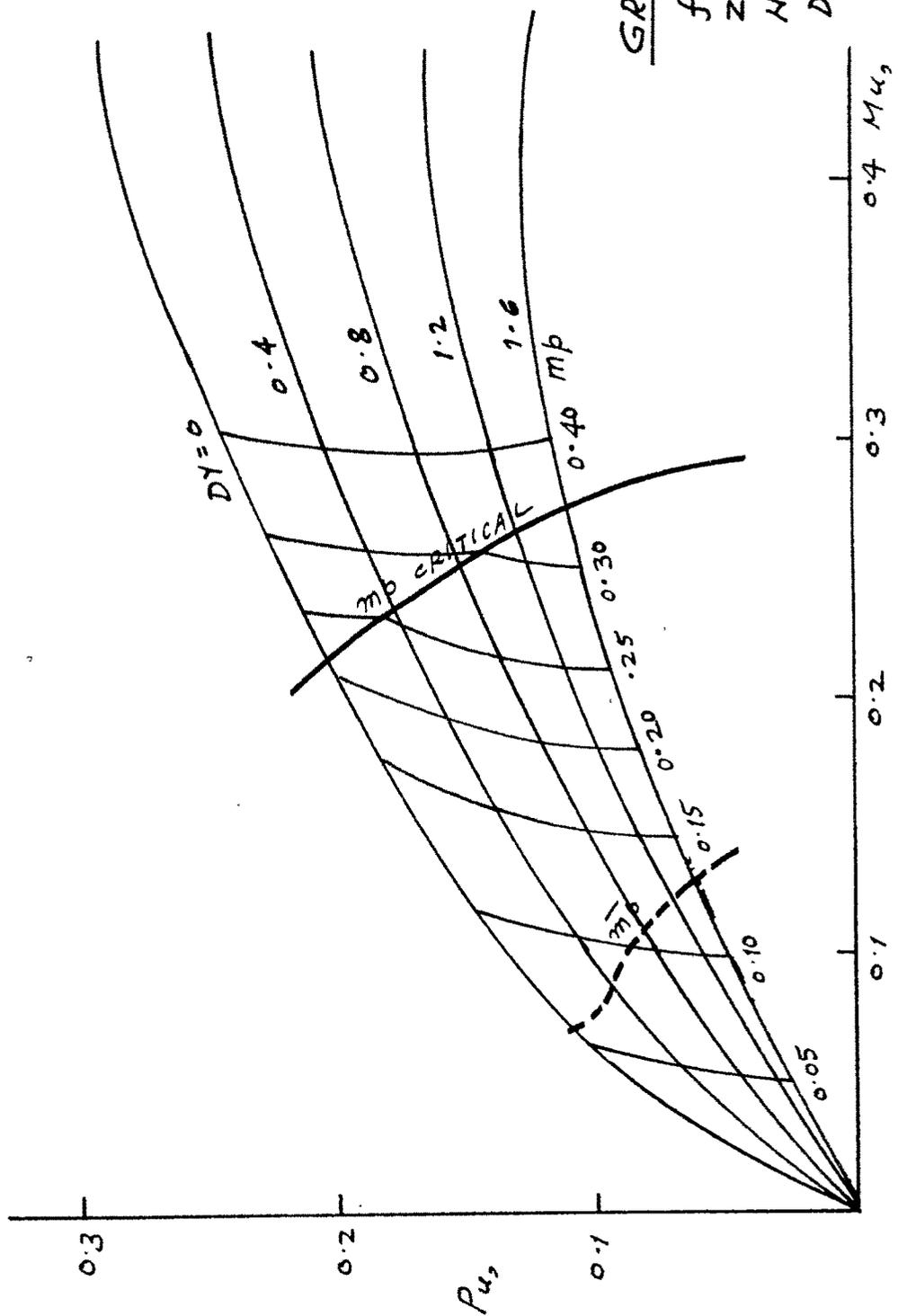$N = 1.1$
$D_4 = 0$

ULTIMATE THRUST MOMENT INTERACTION

mp CRITICAL

mp

$D_4 = 0$

0.8
1.2
1.6

0.40
0.30
0.25
0.20
0.15
0.10
0.05

0.4
0.3
0.2
0.1
Pu,

0.1 0.2 0.3 0.4 Mu,

209

GRAPH - 40

$f = 0.5$
$z = 0.5$
$N = 1.1$
$D_x = 0.4$

ULTIMATE THRUST MOMENT INTERACTION

mp CRITICAL

mp

Mu_1

Pu_1

0·0
0·05
0·10
0·15
0·20
0·25
0·30
0·40 mp

0·4
0·8
1·2
1·6

D=1·0

210

GRAPH - 41

$f = 0.5$
$z = 0.5$
$N = 1.1$
$D_x = 0.8$

211

ULTIMATE THRUST MOMENT INTERACTION

Mu,

Pu,

$D' = 0$

mp CRITICAL

mp 0.40

0.30

0.20

0.15

0.10

0.05

mp
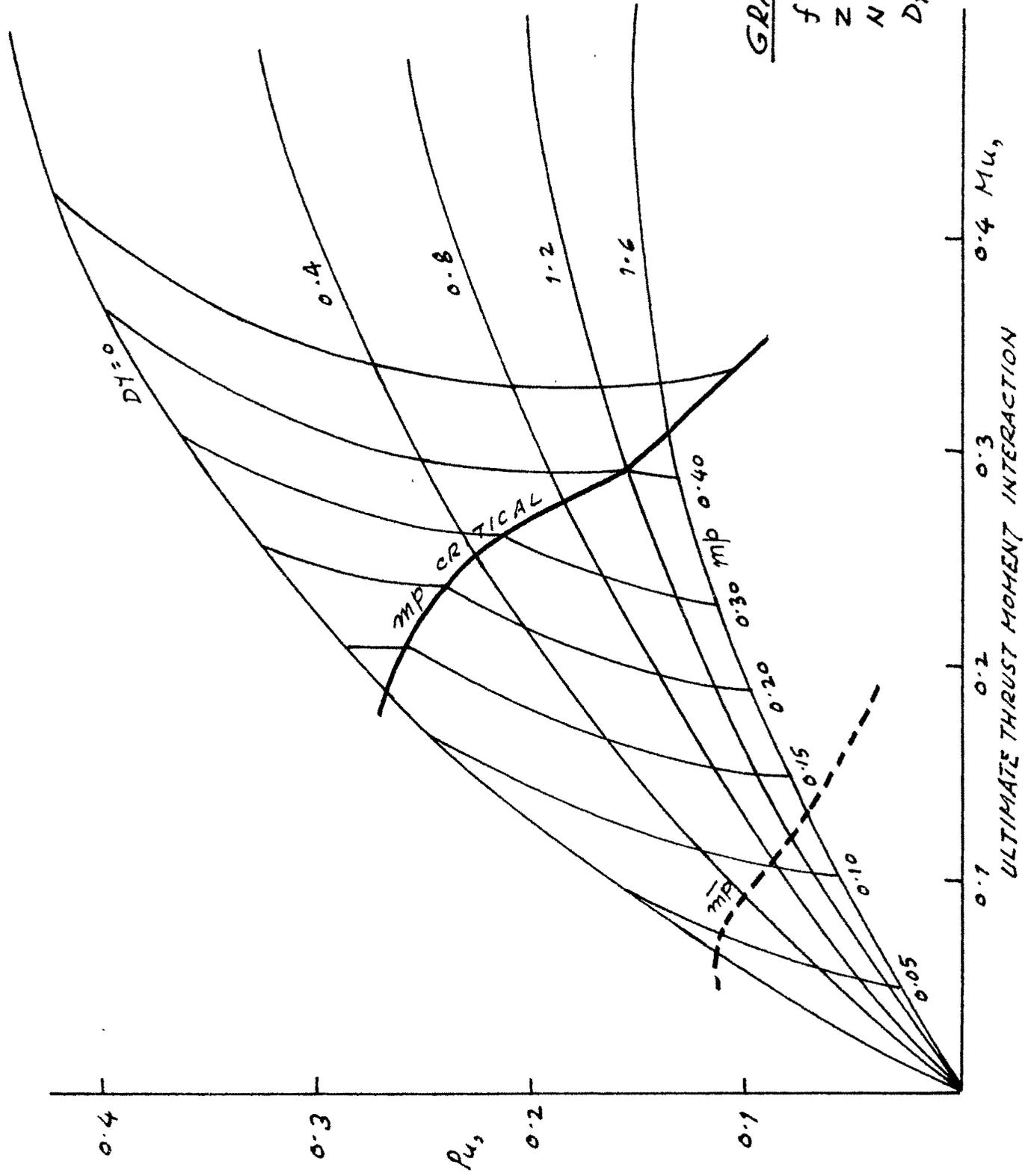
GRAPH-42

$f = 0.5$
$z = 0.5$
$H = 1.1$
$D_x = 1.2$

ULTIMATE THRUST MOMENT INTERACTION
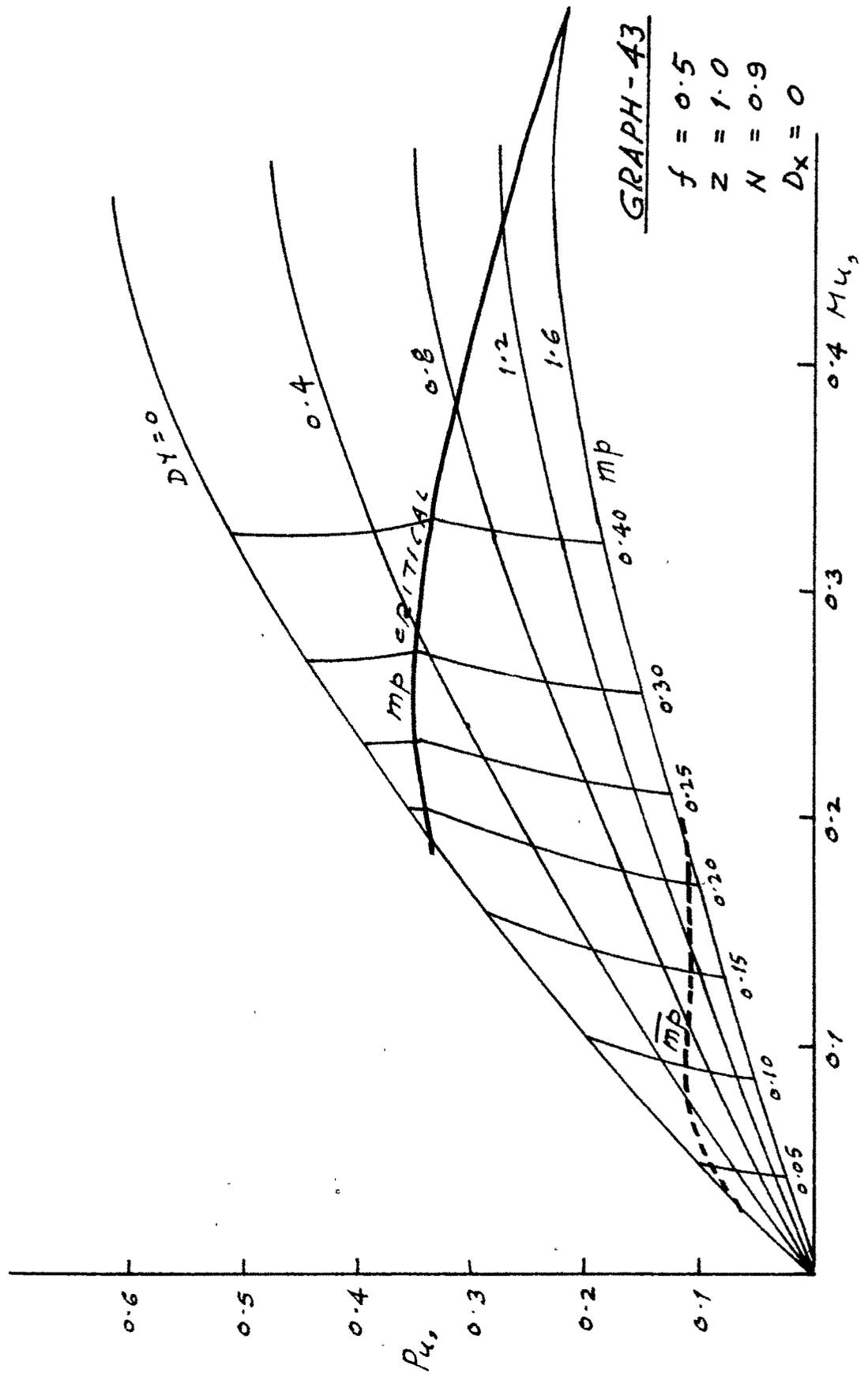
Mu_3

Pu_3

$DY = 0$

mp CRITICAL

0.4 mp

0.05
0.10
0.15
0.20
0.25
0.30
0.40

0.4
0.8
1.2
1.6

GRAPH-43

$f = 0.5$
$z = 1.0$
$N = 0.9$
$D_x = 0$

ULTIMATE THRUST MOMENT INTERACTION

Mu,

Pu,

213

GRAPH-44

$f = 0.5$
$z = 1.0$
$N = 0.9$
$D_x = 0.4$

ULTIMATE THRUST MOMENT INTERACTION

$Mu,$

$Pu,$

$D_x = 0$

mp CRITICAL

$\overline{mp}$

mp

214

GRAPH-45

$f = 0.5$
$z = 1.0$
$H = 0.9$
$D_x = 0.8$

ULTIMATE THRUST MOMENT INTERACTION

$Mu,$

$Pu,$

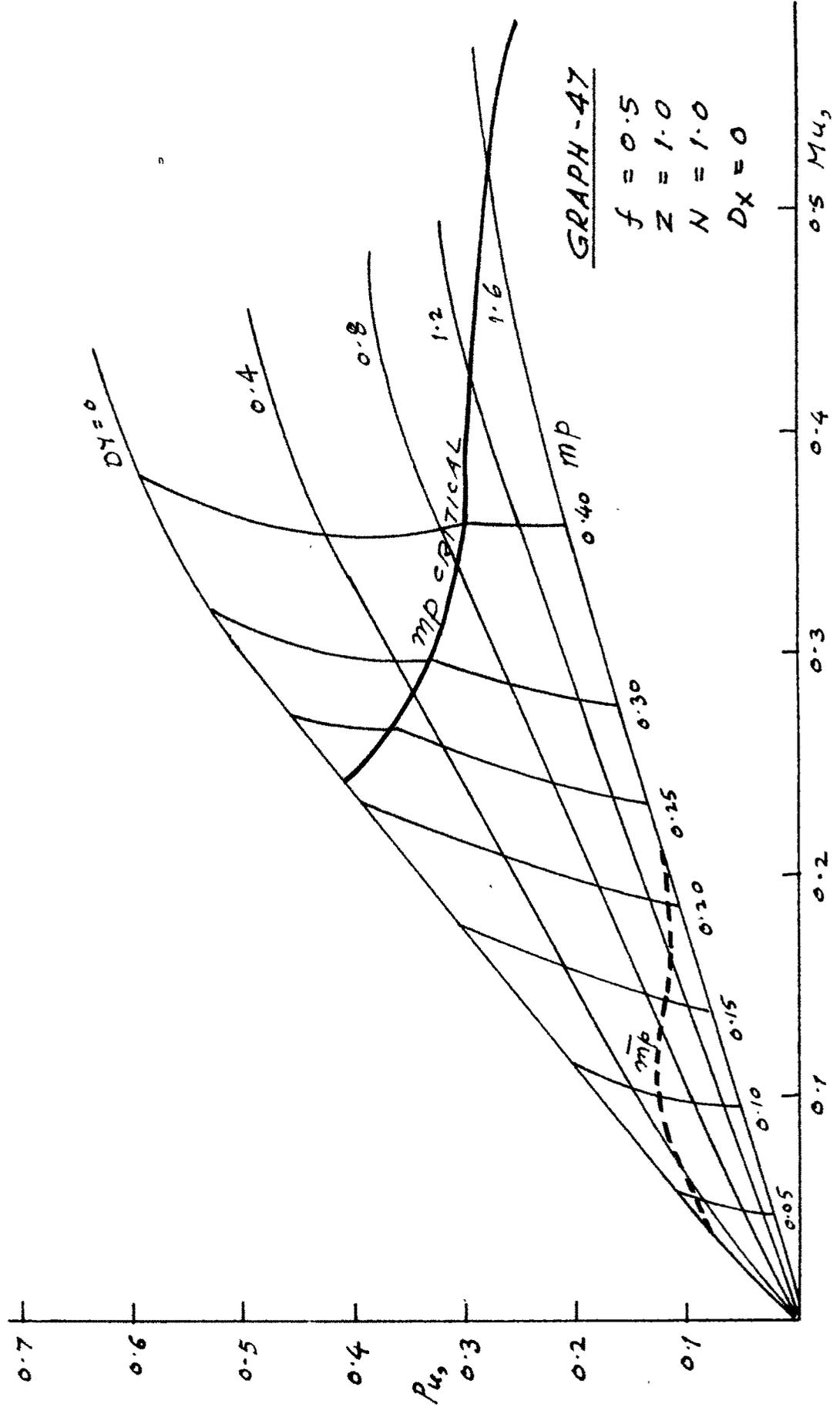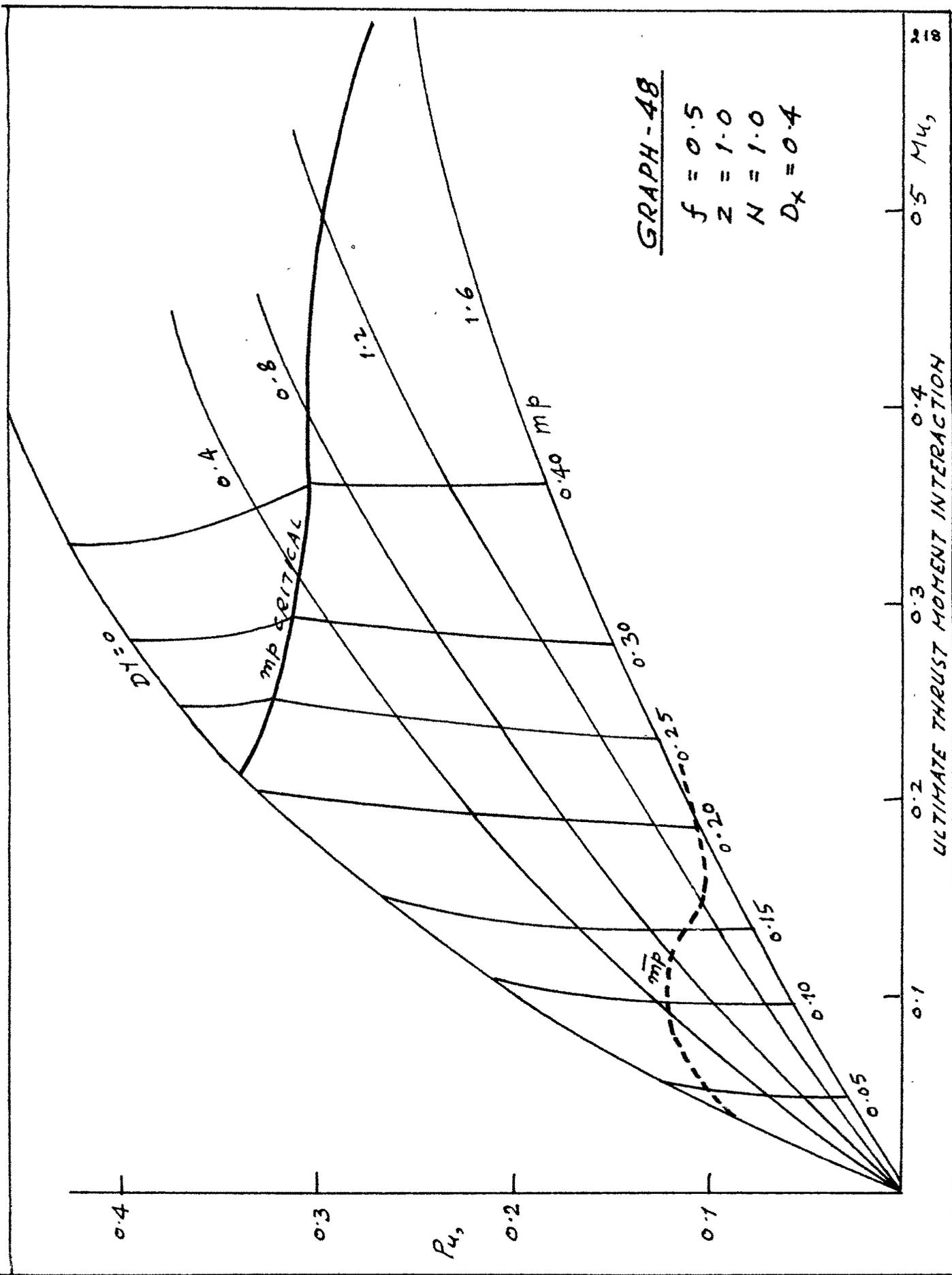mp CRITICAL

$D_Y = 0$

$\overline{mp}$

mp

215
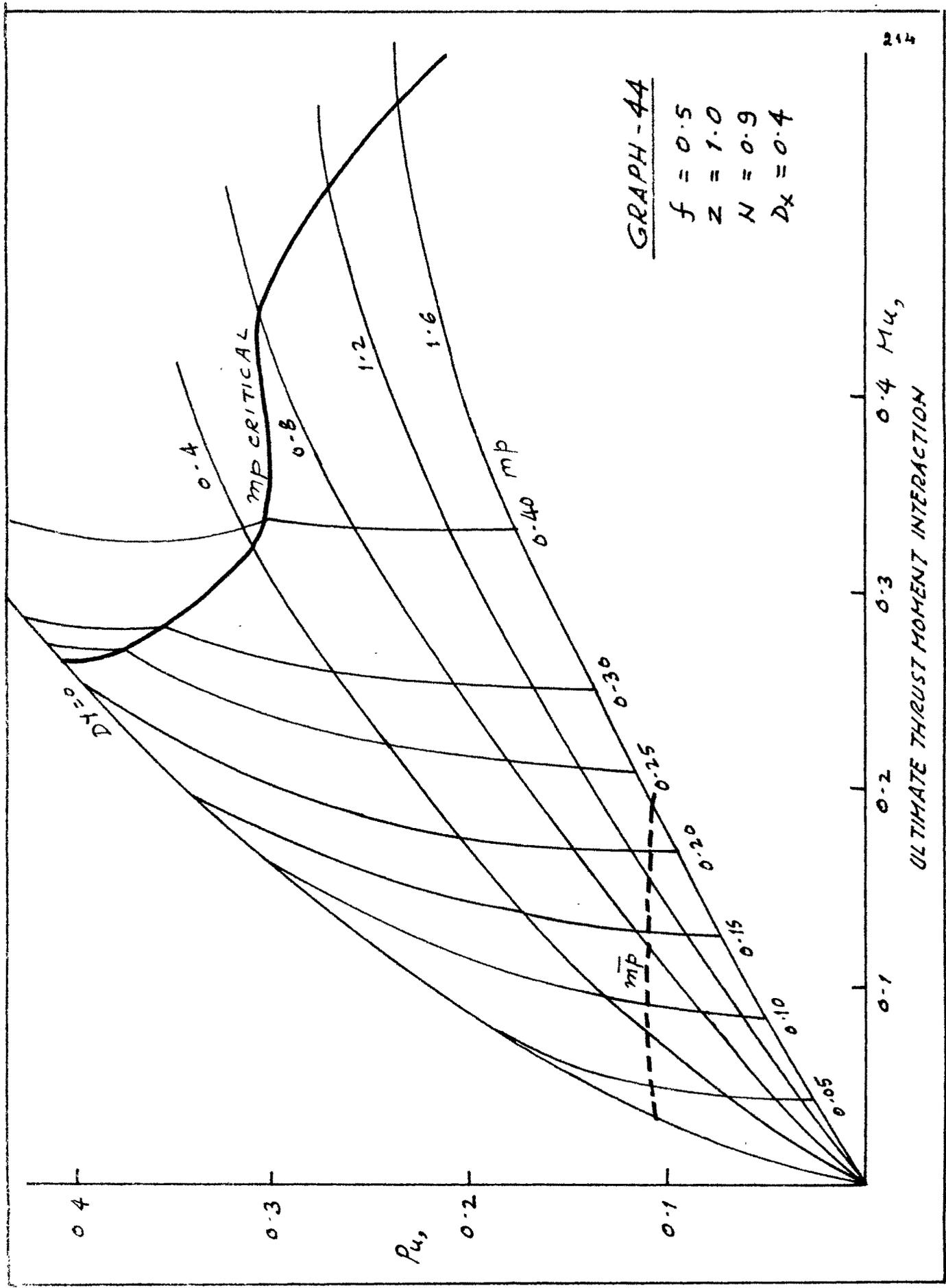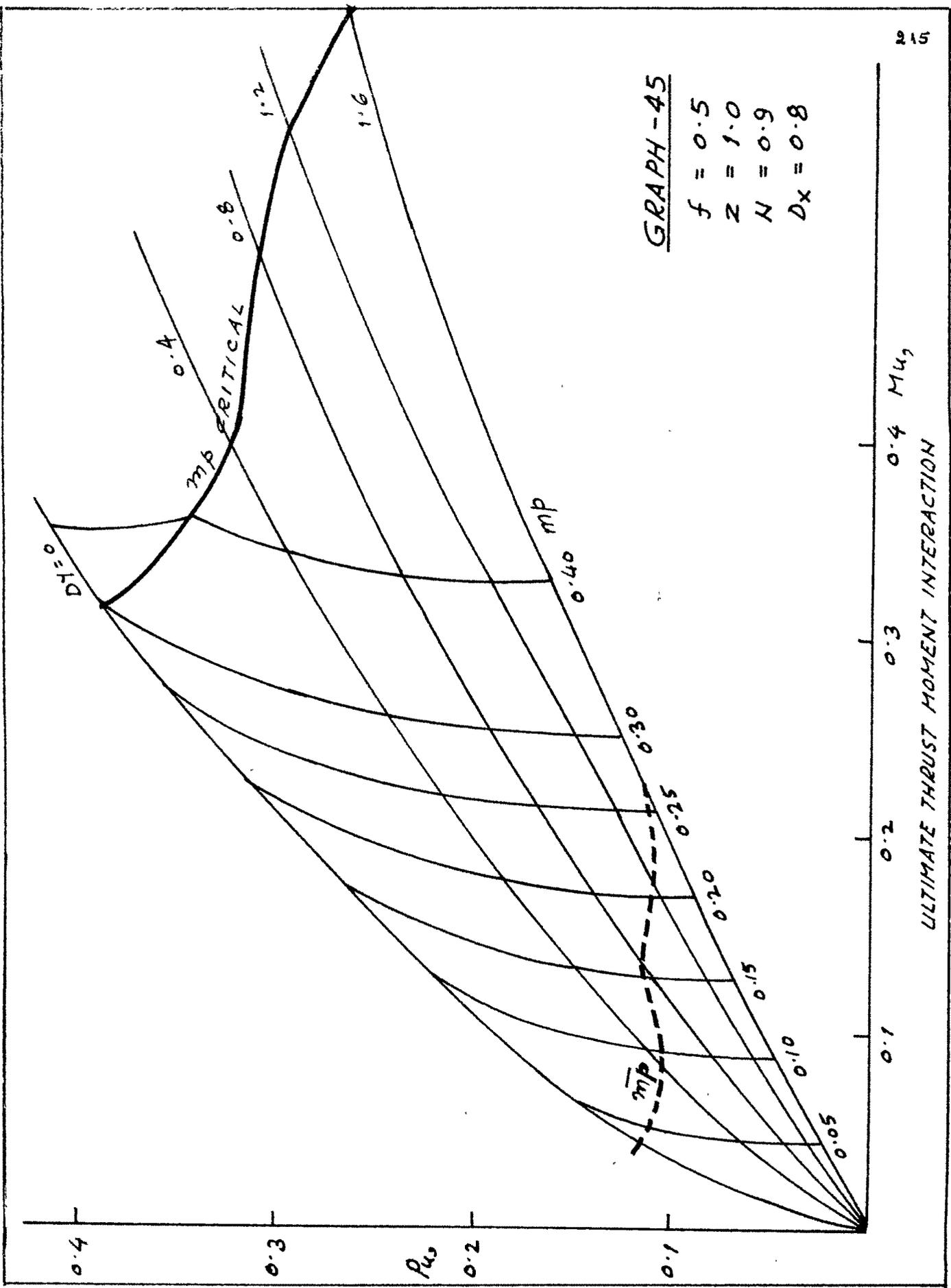
GRAPH-46
$f = 0.5$
$z = 1.0$
$N = 0.9$
$D_r = 1.2$

ULTIMATE THRUST MOMENT INTERACTION

216
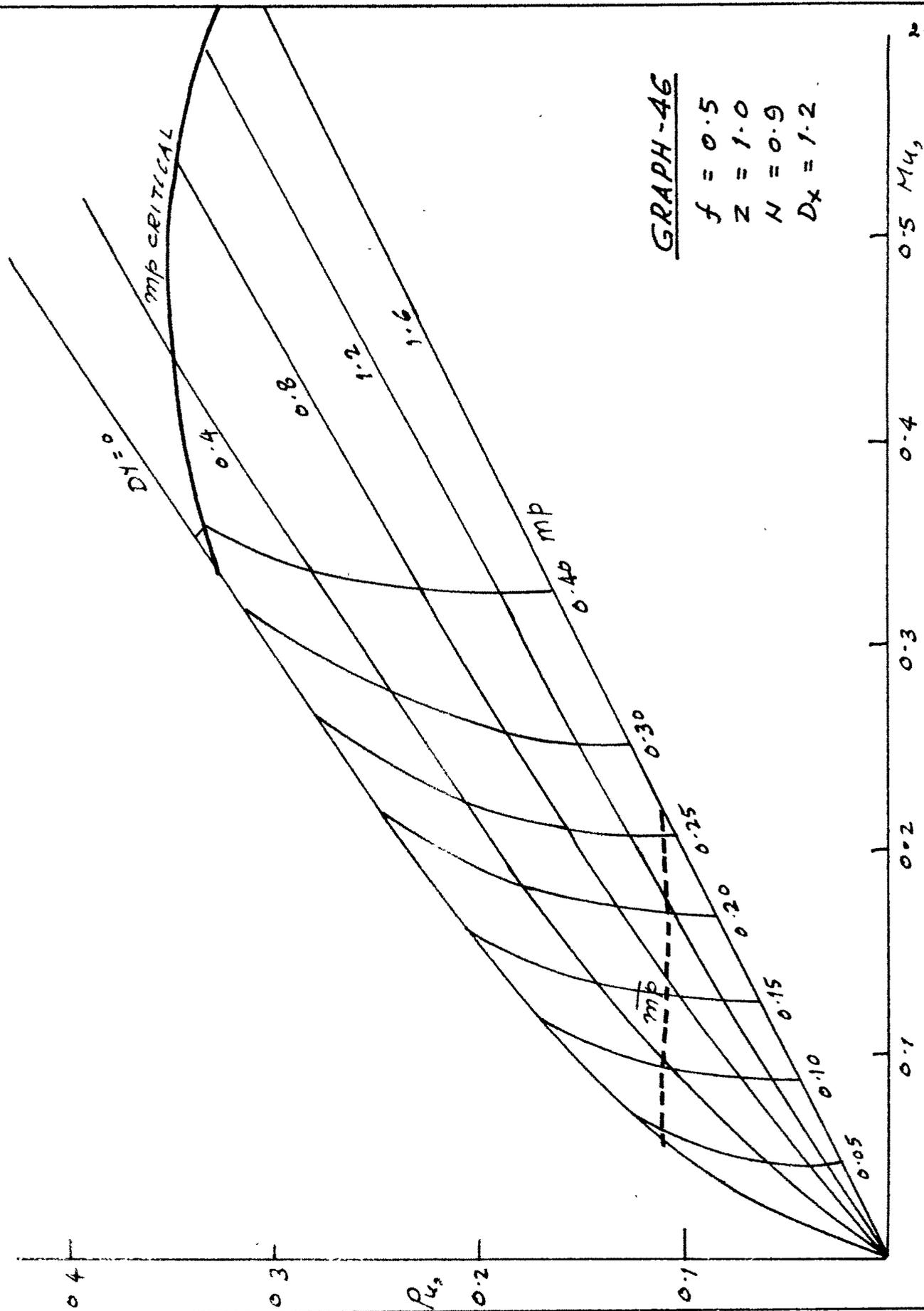
GRAPH - 47

$f = 0.5$
$Z = 1.0$
$N = 1.0$
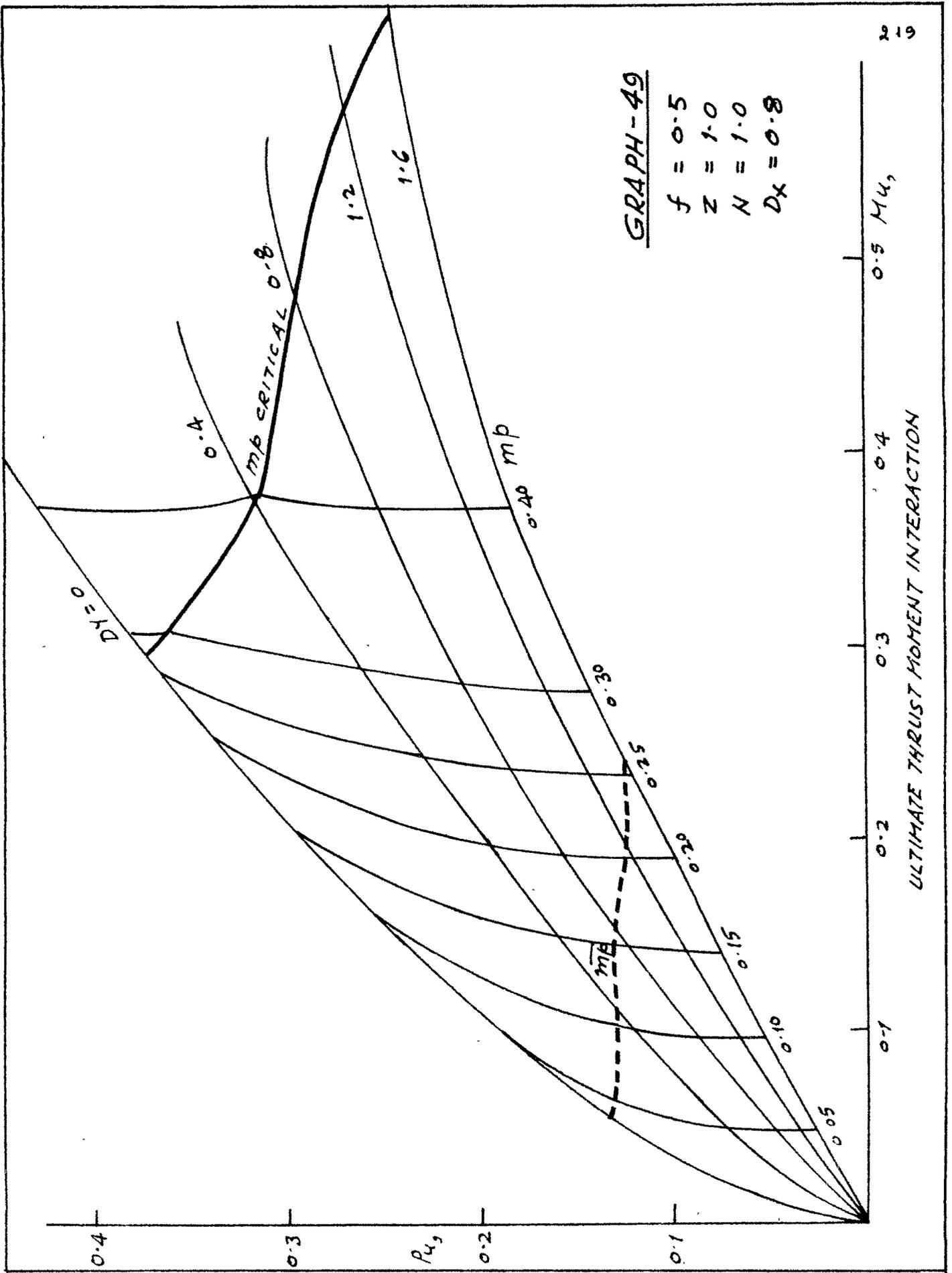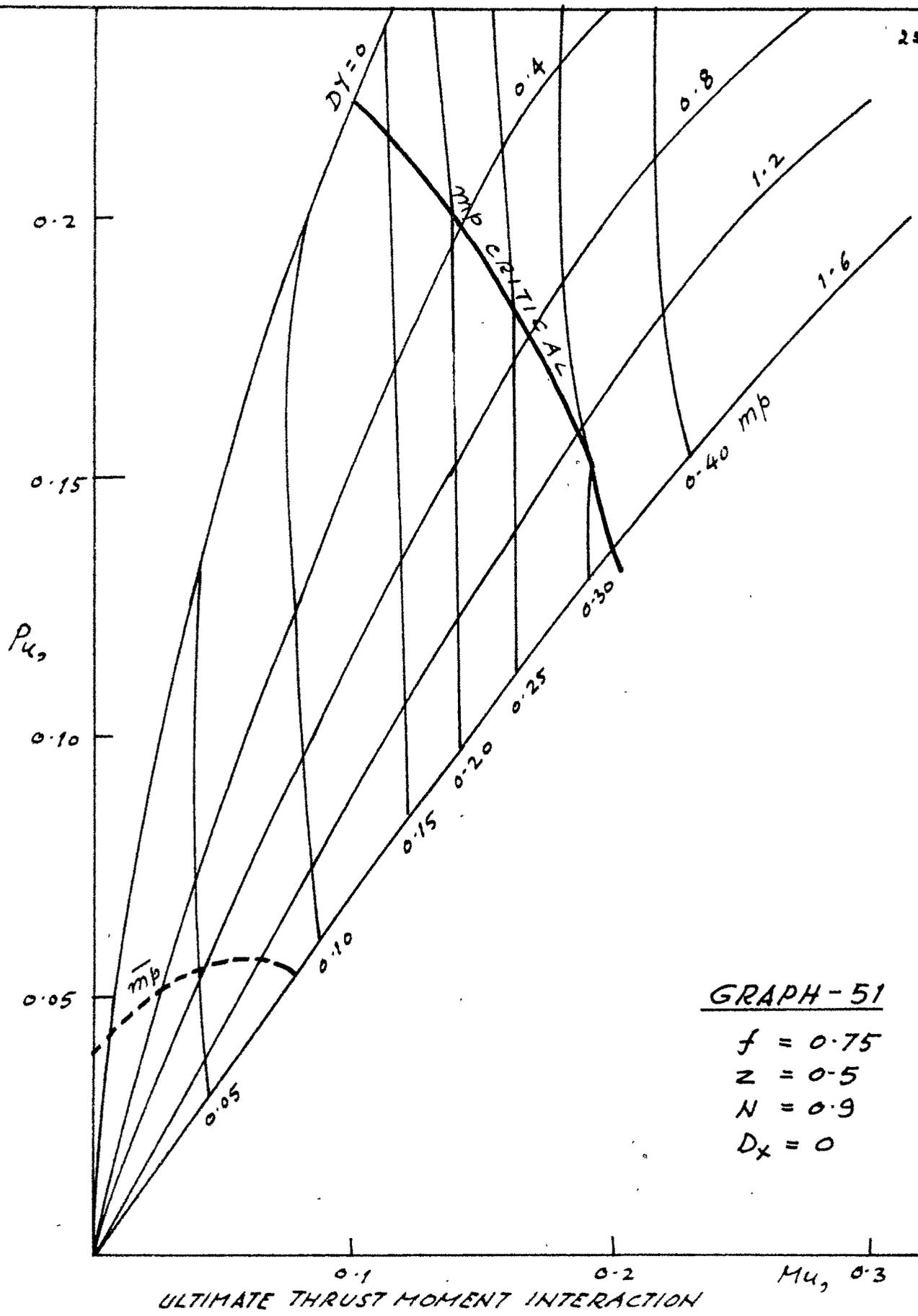$Dx = 0$

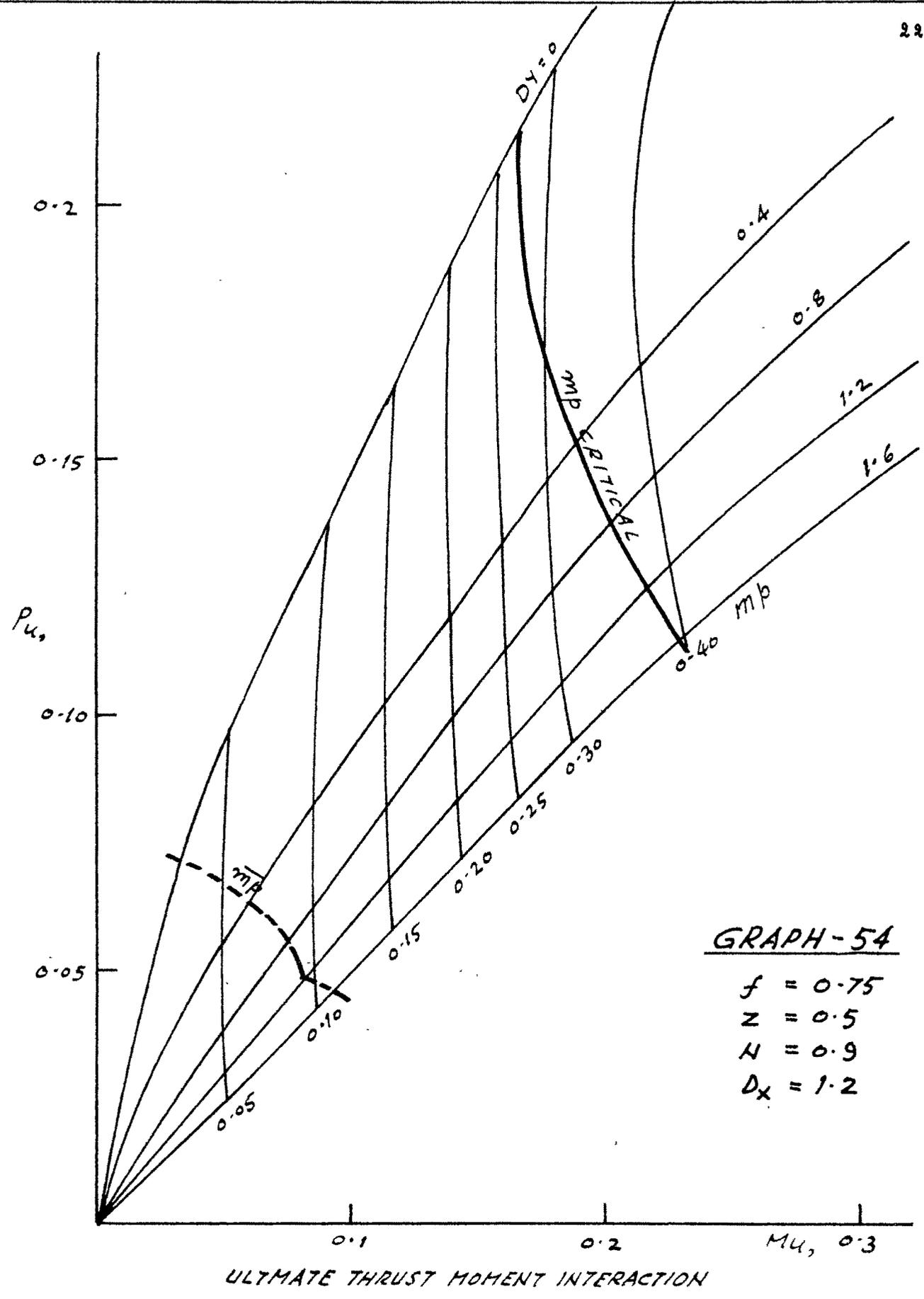ULTIMATE THRUST MOMENT INTERACTION

$Mu,$

$Pu,$

0.5 0.4 0.3 0.2 0.1

0.7 0.6 0.5 0.4 0.3 0.2 0.1

$DY = 0$

0.4

0.8

1.2

1.6

MP

MP CRITICAL

$\overline{mp}$

0.40

0.30

0.25

0.20

0.15

0.10

0.05

217

GRAPH - 48

$f = 0.5$
$z = 1.0$
$N = 1.0$
$D_x = 0.4$

ULTIMATE THRUST MOMENT INTERACTION

$0.5 \ Mu_3$

P_u,

$D = 0$

mp CRITICAL

$\overline{mp}$

mp

218

GRAPH-49

$f = 0.5$
$z = 1.0$
$N = 1.0$
$D_x = 0.8$

ULTIMATE THRUST MOMENT INTERACTION

Mu,

Pu,

mb CRITICAL 0.8

$D_x = 0$

mb

mp

219

GRAPH-50

$f = 0.5$
$z = 1.0$
$N = 1.0$
$D_x = 1.2$

ULTIMATE THRUST MOMENT INTERACTION

M_u,

P_u,

$D\eta = 0$

mb CRITICAL

$\overline{mp}$

mp

$DY=0$

0.4

0.8

1.2

1.6

$mp\ CRITICAL$

$0.40\ mp$

0.30

0.25

0.20

0.15

0.10

0.05

$\overline{mp}$

0.2

0.15

0.10

0.05

$P_u,$

GRAPH - 51

$f = 0.75$

$z = 0.5$

$N = 0.9$

$D_x = 0$

0.1

0.2

$M_u,\ 0.3$

ULTIMATE THRUST MOMENT INTERACTION

ULTIMATE THRUST MOMENT INTERACTION
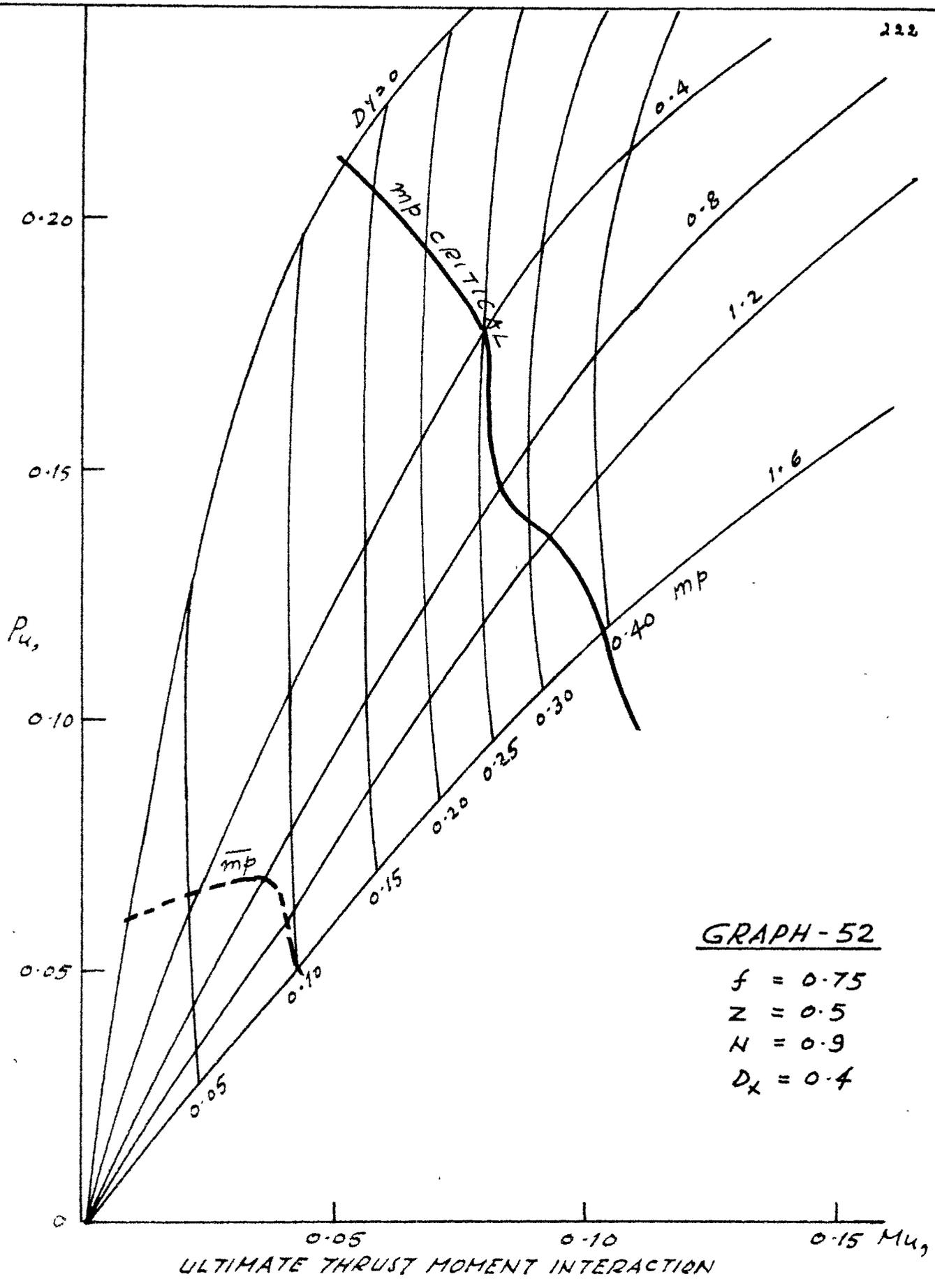
GRAPH - 52

$f = 0.75$
$z = 0.5$
$N = 0.9$
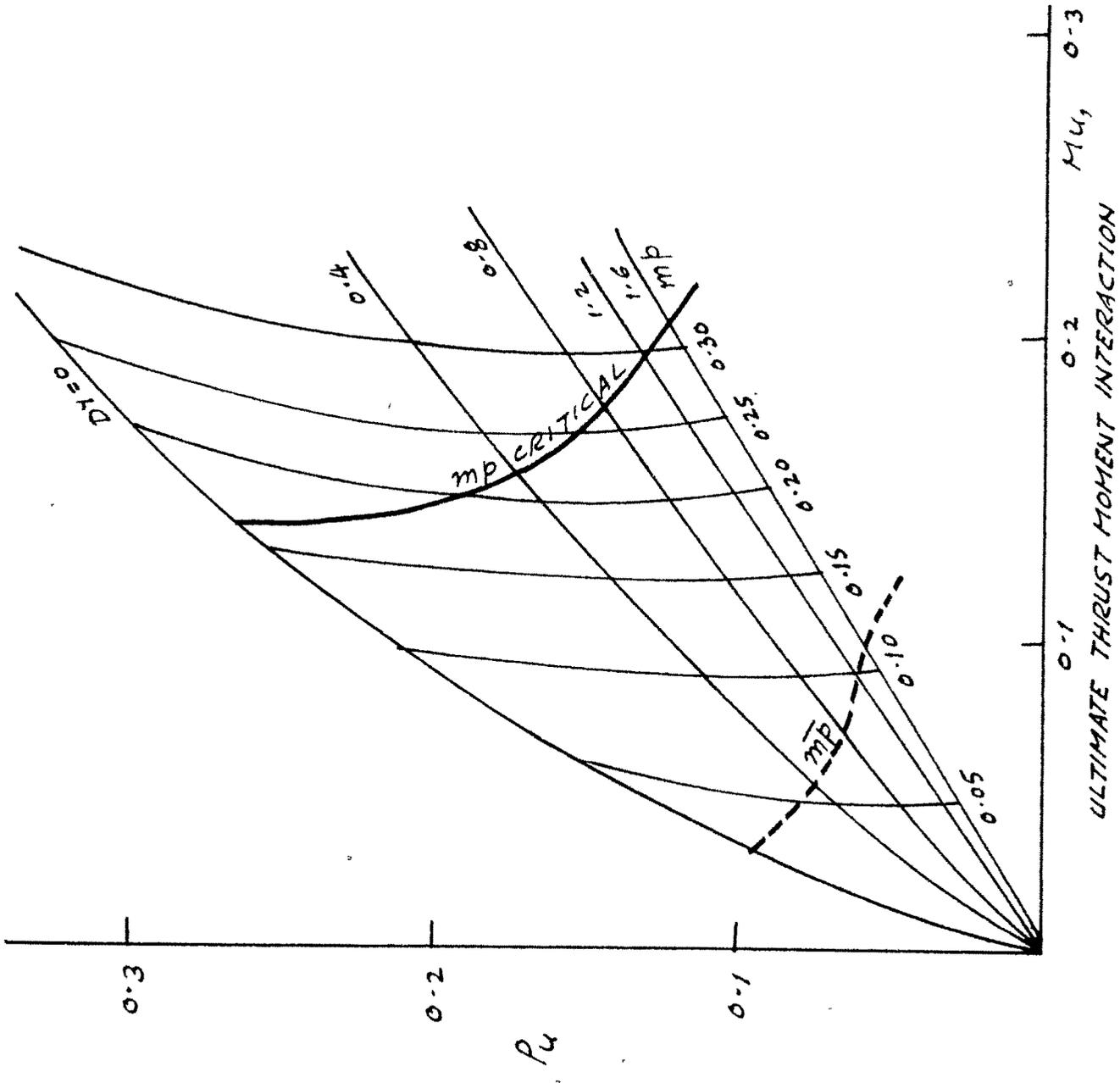$D_x = 0.4$

ULTIMATE THRUST MOMENT INTERACTION

GRAPH - 53

$f = 0.75$
$z = 0.5$
$N = 0.9$
$D_x = 0.6$
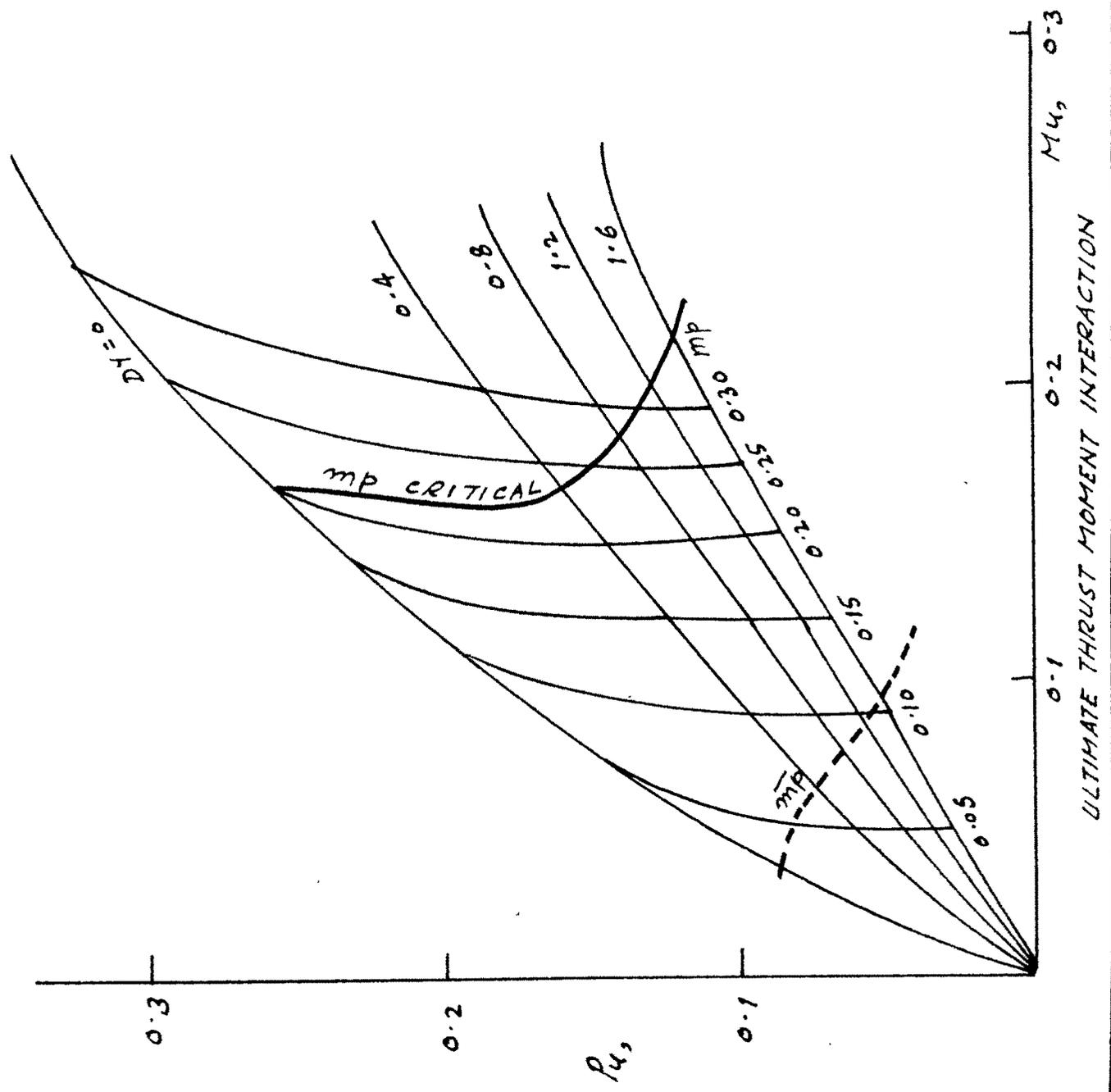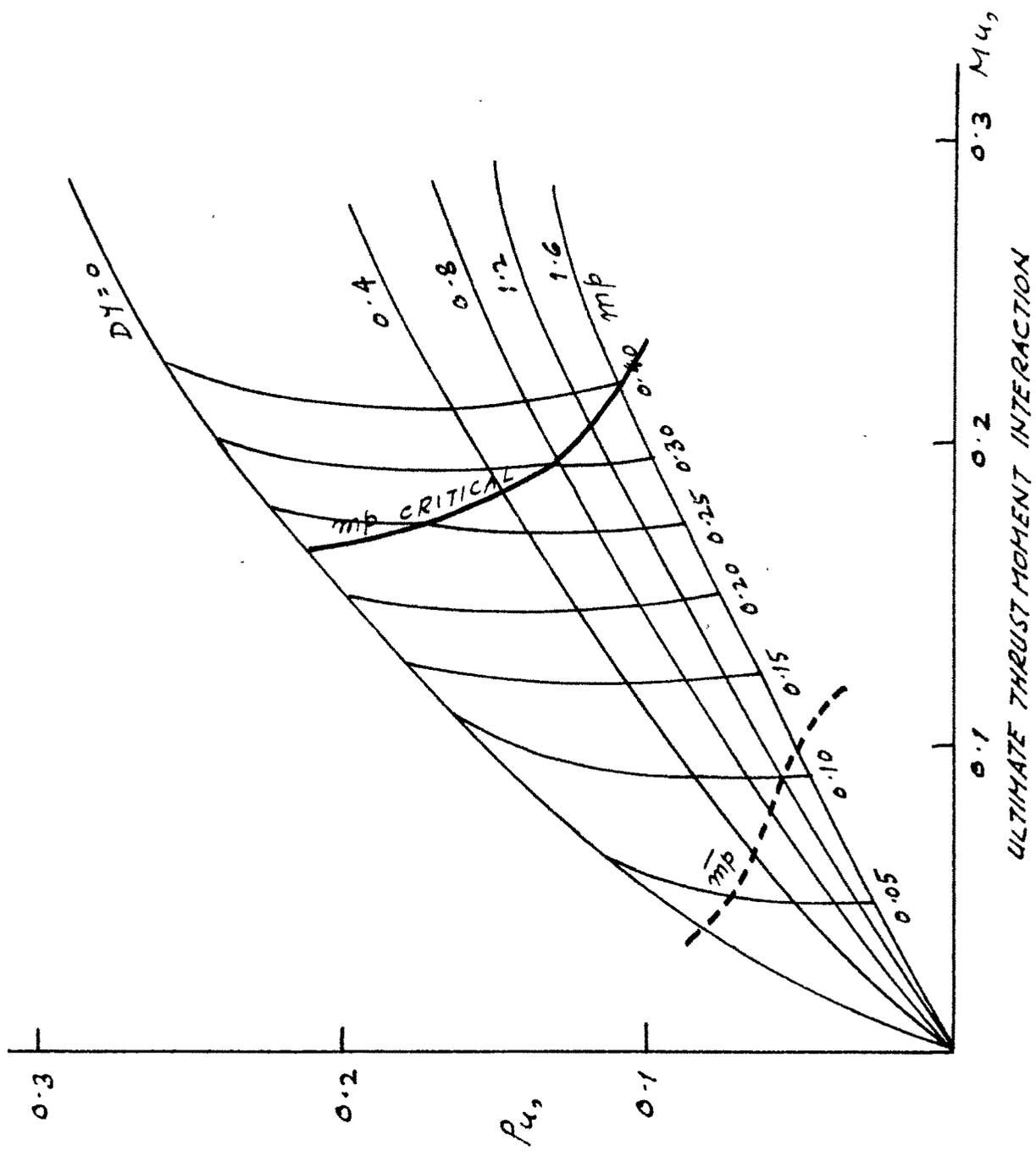
ULTIMATE THRUST MOMENT INTERACTION
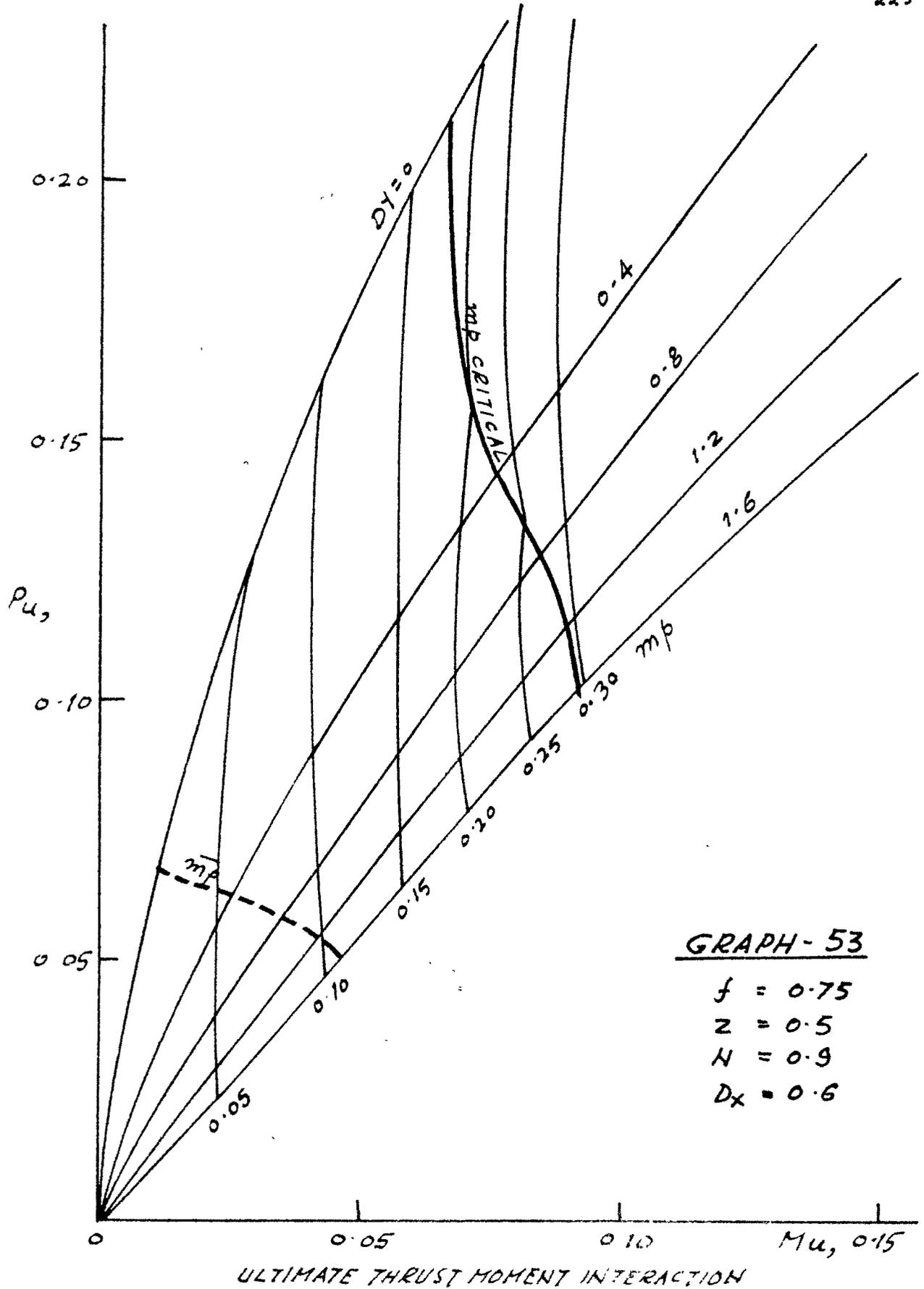
GRAPH-54

$f = 0.75$
$z = 0.5$
$N = 0.9$
$D_x = 1.2$

P_u,

M_u, 0·3

GRAPH-55

$f = 0.75$
$Z = 0.5$
$N = 1.0$
$D_x = 0$

Mu,

ULTIMATE THRUST MOMENT INTERACTION

Pu,

225

GRAPH-56

$f = 0.75$
$z = 0.5$
$N = 1.0$
$D_t = 0.4$

226
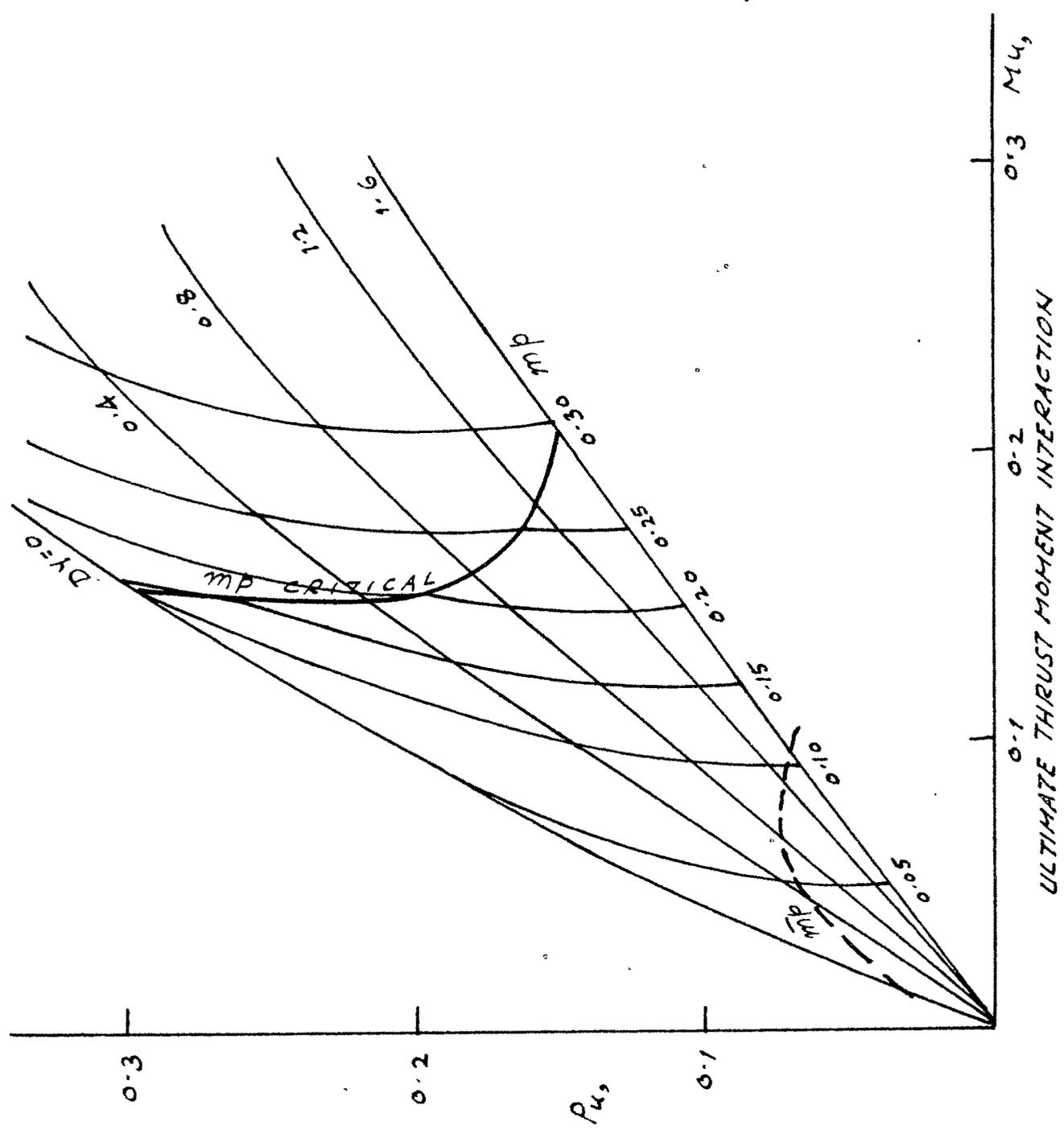
ULTIMATE THRUST MOMENT INTERACTION

GRAPH-57

$f = 0.75$
$z = 0.5$
$N = 1.0$
$D_x = 0.8$

ULTIMATE THRUST MOMENT INTERACTION

M_u,

P_u,

227

GRAPH-58

$f = 0.75$
$z = 0.5$
$N = 1.0$
$D_x = 1.2$

ULTIMATE THRUST MOMENT INTERACTION
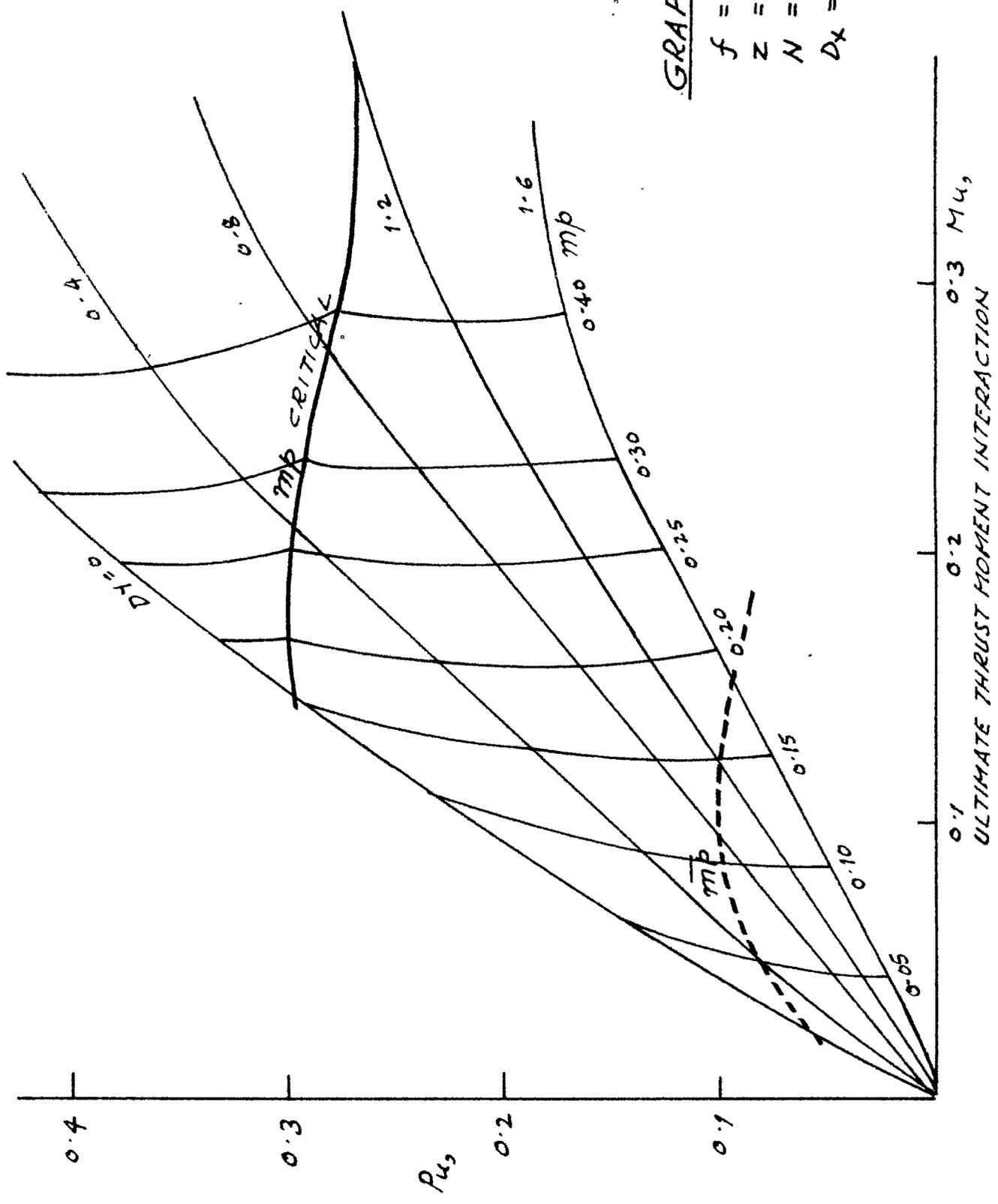
228

GRAPH - 59

$f = 0.75$
$z = 0.5$
$N = 1.1$
$D_x = 0$

$Mu, 0.3$

ULTIMATE THRUST MOMENT INTERACTION

$Pu,$

mp CRITICAL

mp

$Dx = KD$
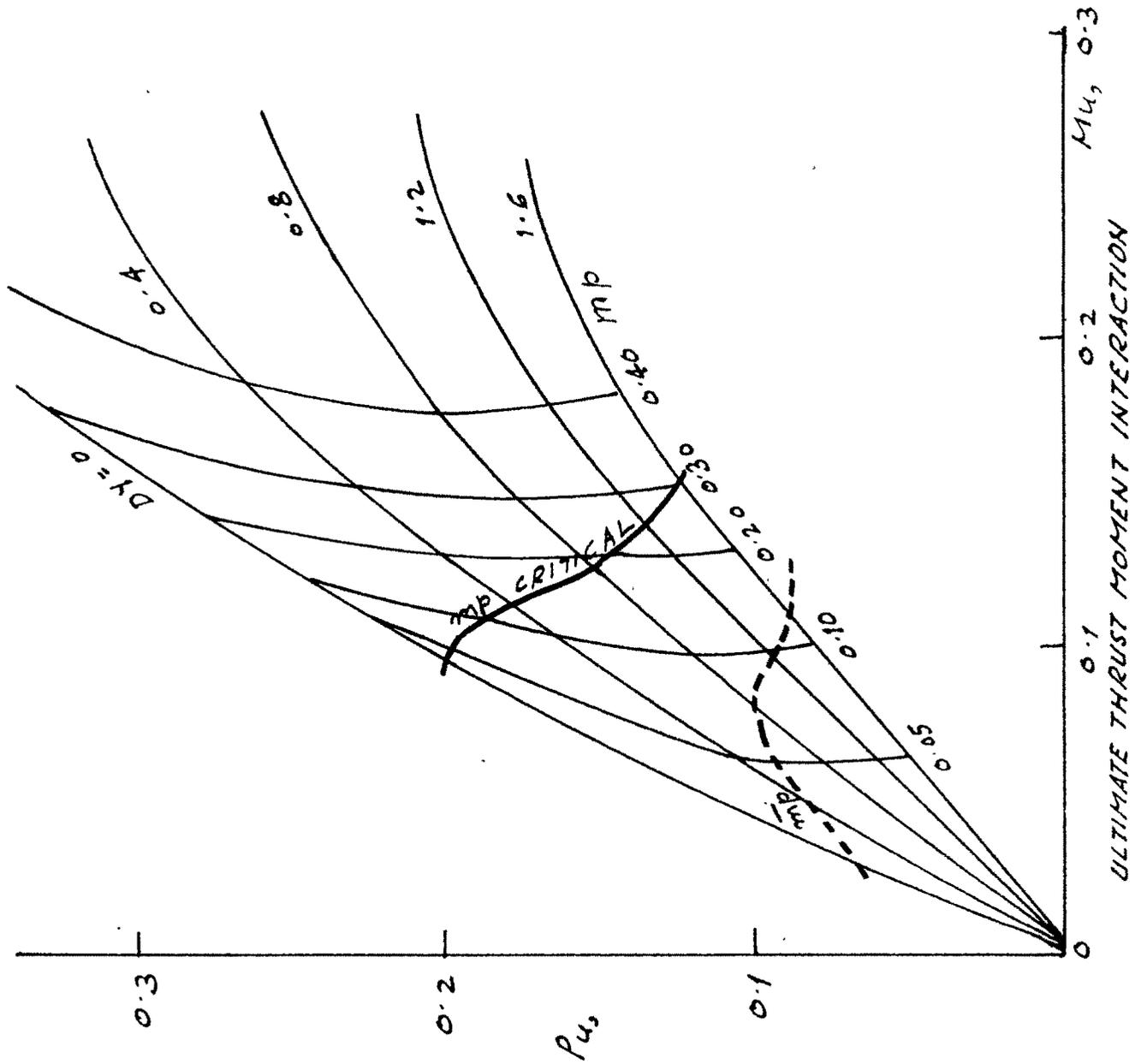
GRAPH-60

$f = 0.75$
$z = 0.5$
$N = 1.1$
$D_x = 0.4$

mp CRITICAL

$\overline{mp}$

$D = 1.0$

0.4
0.8
1.2
1.6
mp

0.40
0.30
0.20
0.10
0.05
0.0

Mu_3

0.3
0.2
0.1

ULTIMATE THRUST MOMENT INTERACTION

Pu_3

0.3
0.2
0.1

23b
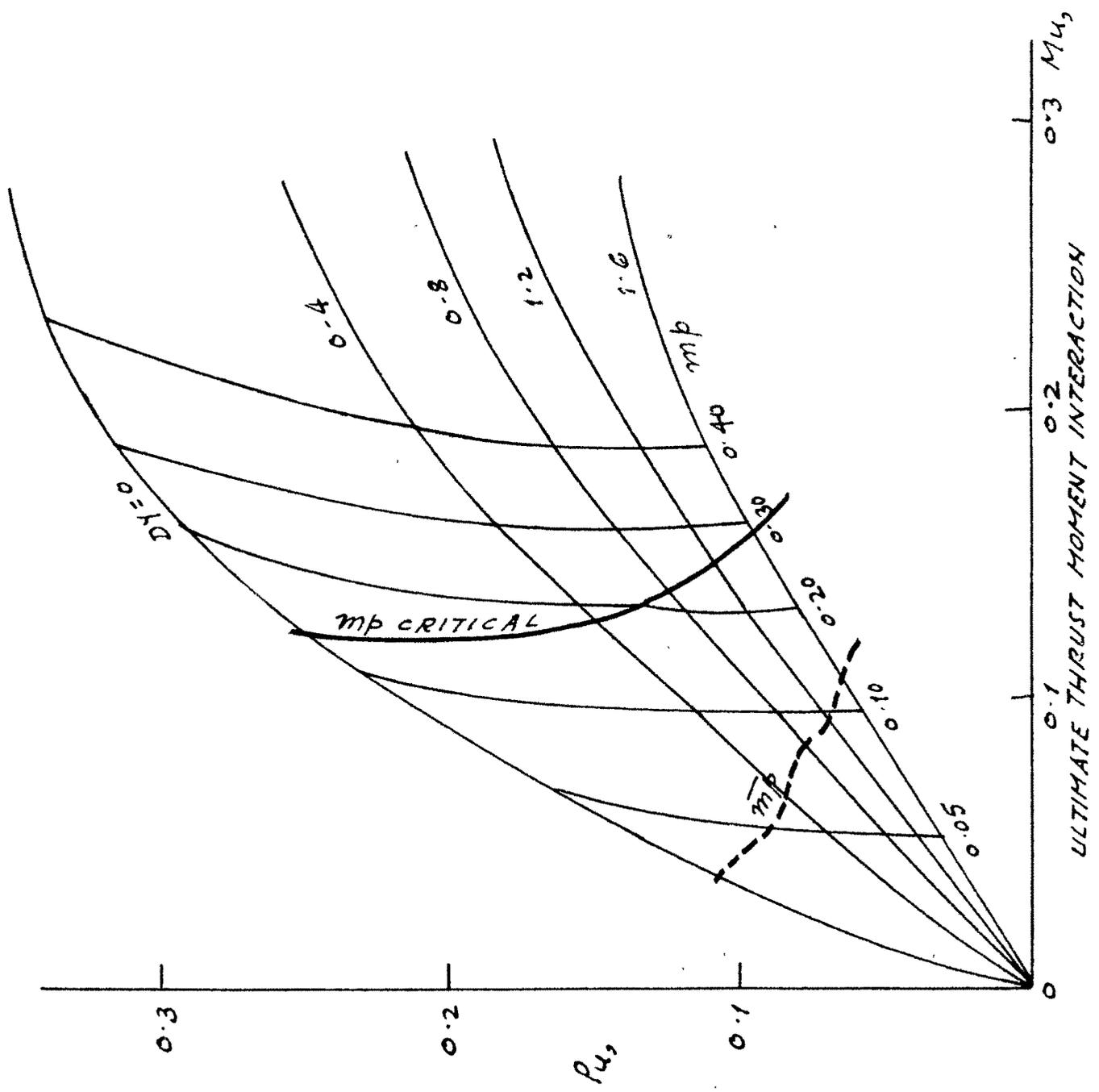
GRAPH-61

$f = 0.75$
$z = 0.5$
$N = 1.1$
$D_x = 0.8$

ULTIMATE THRUST MOMENT INTERACTION
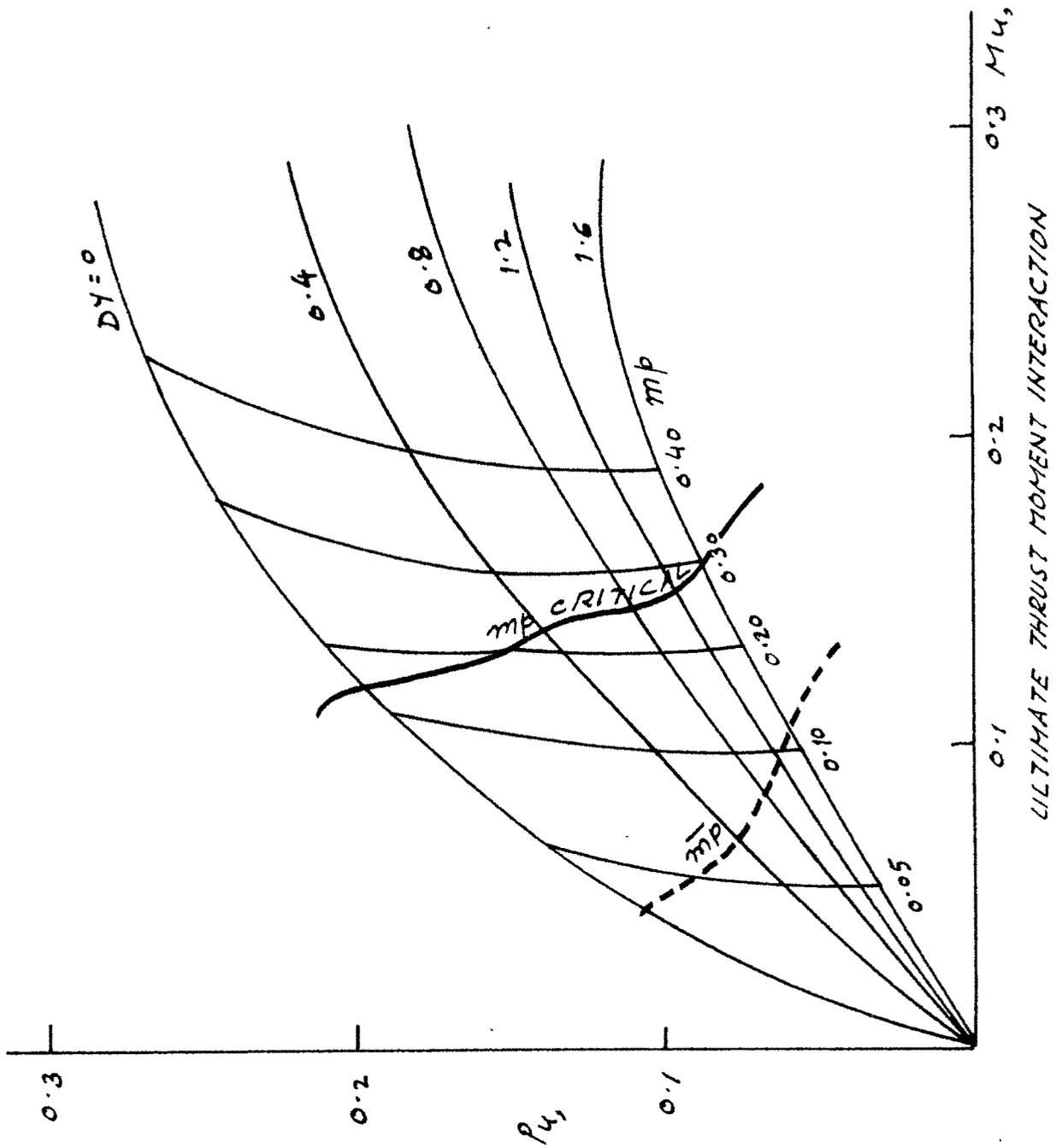
GRAPH-62

$f = 0.75$
$z = 0.5$
$H = 1.1$
$D_x = 1.2$

DY = 0
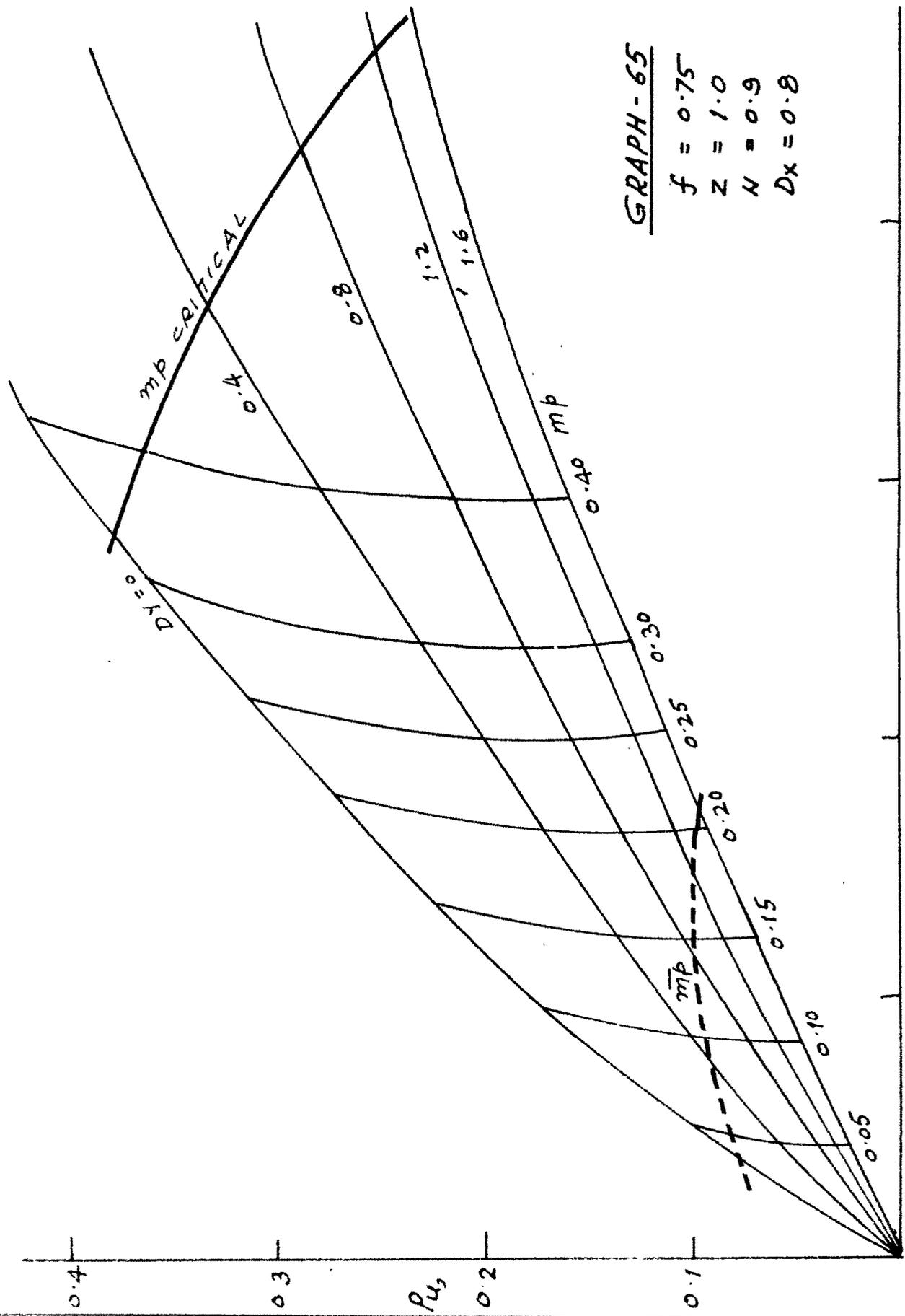0.4
0.8
1.2
1.6
Mp

mp CRITICAL

Mp

0.3
0.25
0.20
0.15
0.10
0.05
0

0.1   0.2   0.3   Mu,

ULTIMATE THRUST MOMENT INTERACTION

0.2
0.1
Pu,

232

GRAPH-63
$f = 0.75$
$z = 1.0$
$N = 0.9$
$D_\alpha = 0$

ULTIMATE THRUST MOMENT INTERACTION

$Mu,$

$Pu,$
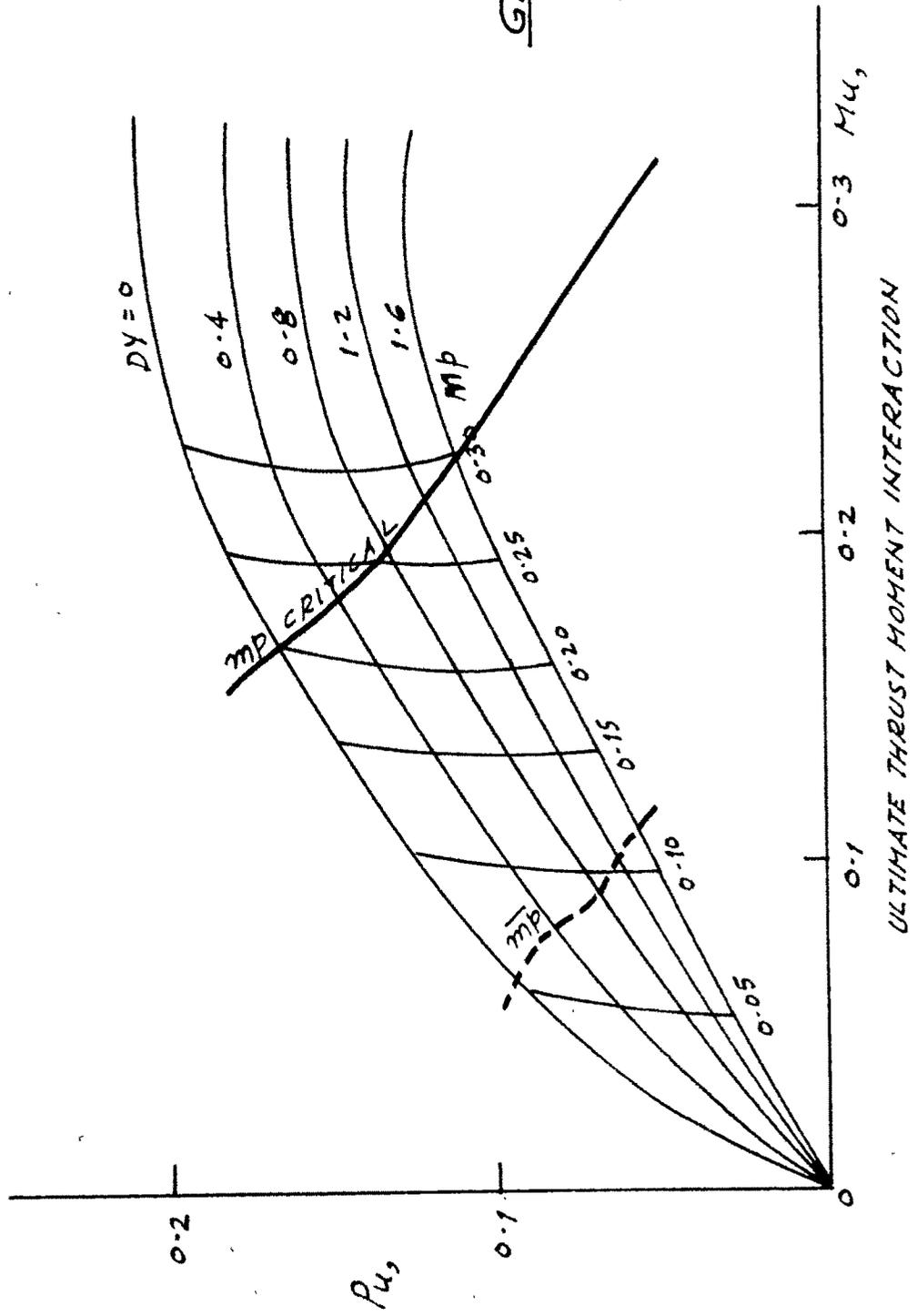
GRAPH-64
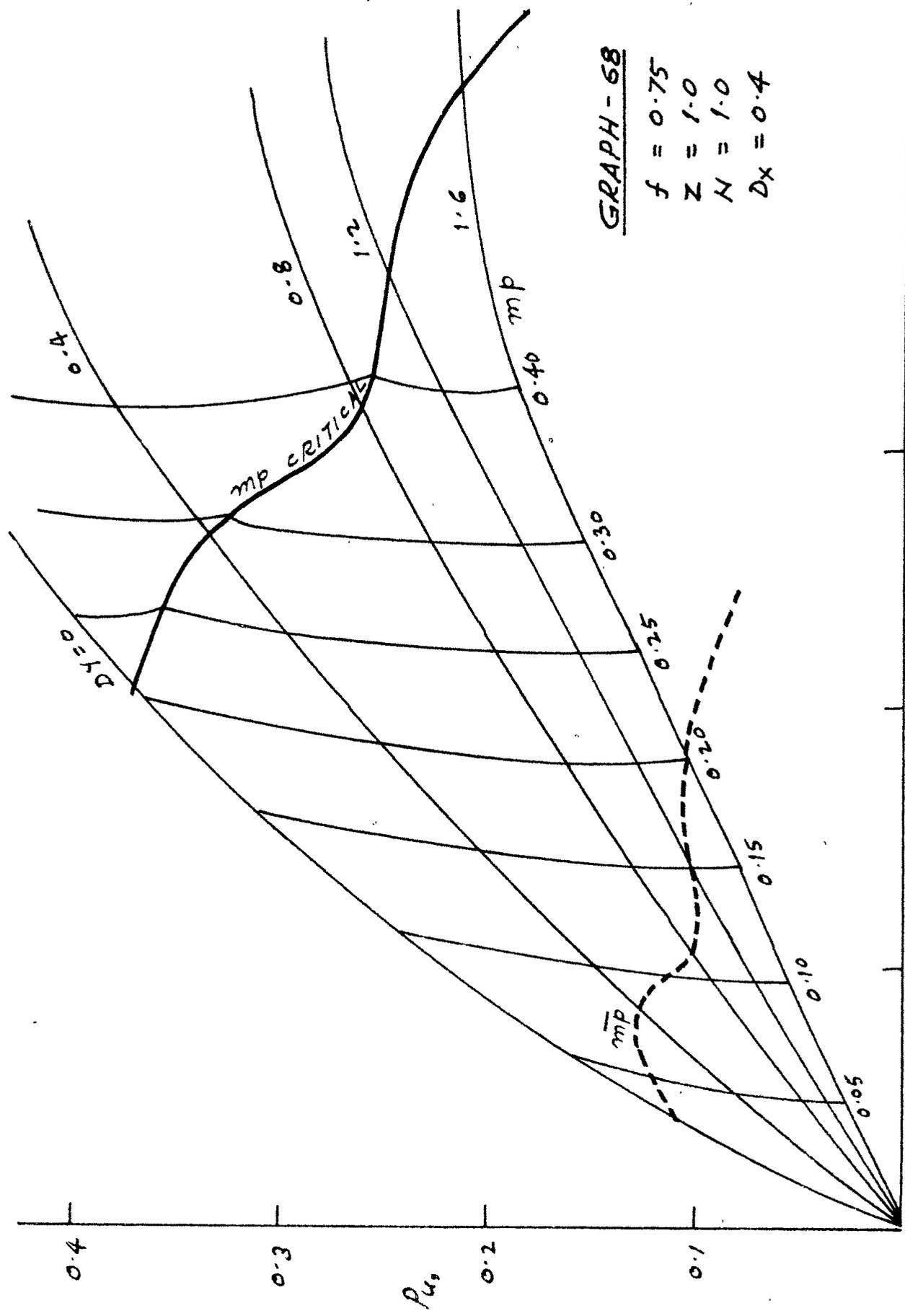
$f = 0.75$
$z = 1.0$
$N = 0.9$
$D_x = 0.4$

$Mu,$

0.4 0.3 0.2 0.1

ULTIMATE THRUST MOMENT INTERACTION

$Pu,$

0.4 0.3 0.2 0.1

mp CRITICAL

0.4 0.8 1.2 1.6

mp

0.40 0.30 0.25 0.20 0.15 0.10 0.05

$D_x = 0$

$\overline{mp}$

234
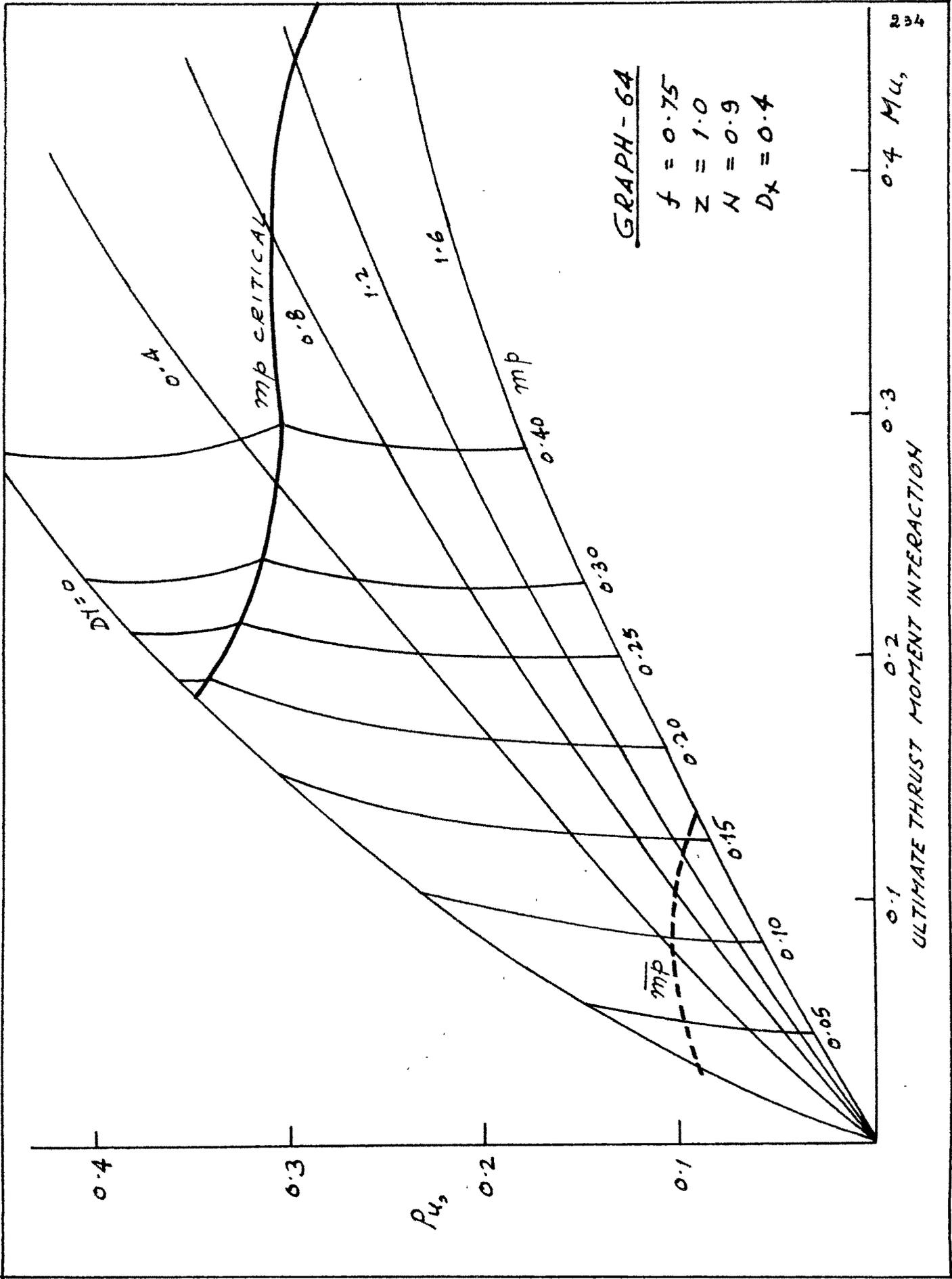
GRAPH-65

$f = 0.75$
$z = 1.0$
$N = 0.9$
$D_x = 0.8$

ULTIMATE THRUST MOMENT INTERACTION

235

GRAPH-66

$f = 0.75$
$z = 1.0$
$N = 0.9$
$D_x = 1.2$
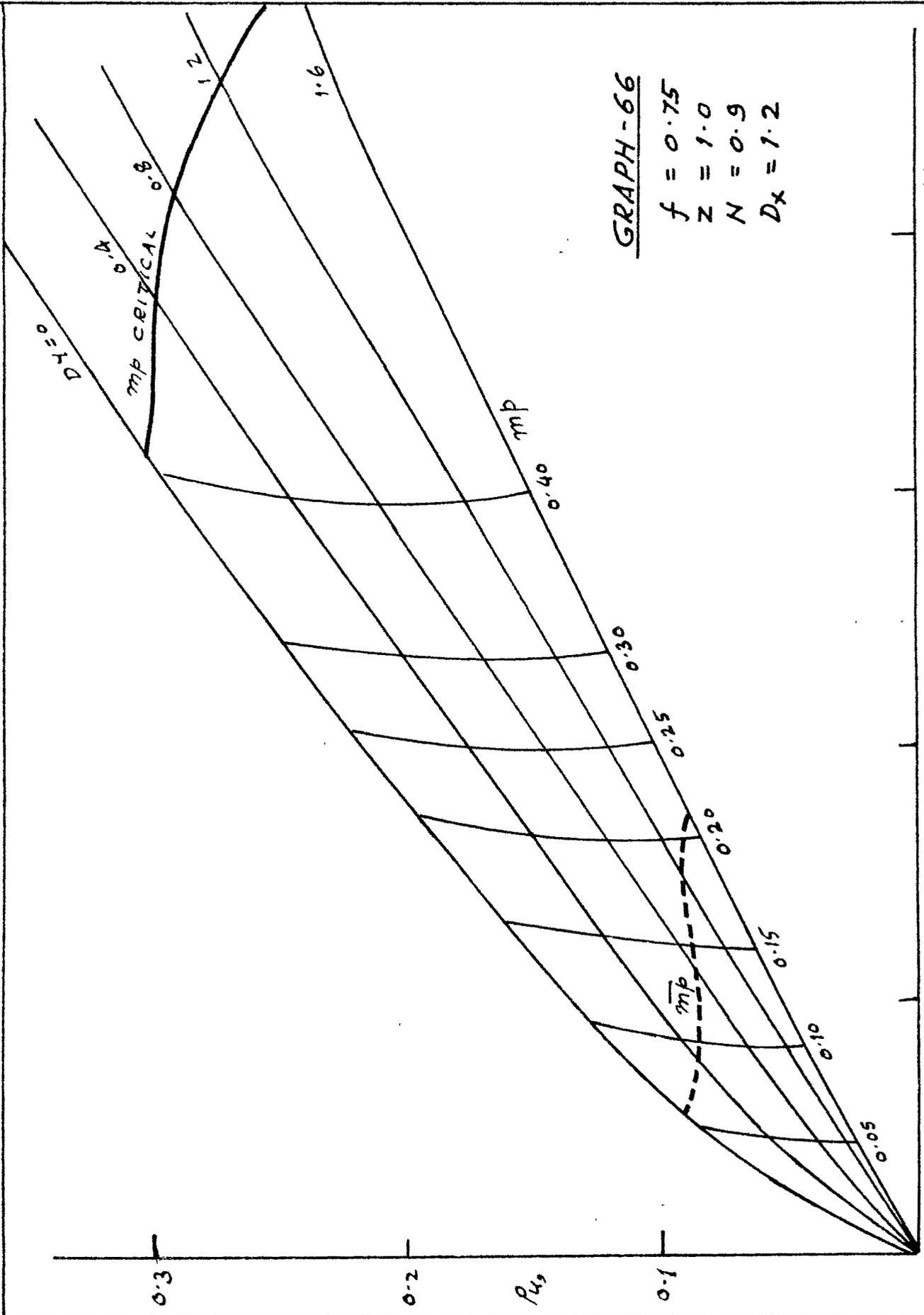
ULTIMATE THRUST MOMENT INTERACTION

$Mu,$

$Pu,$

236

GRAPH - 67

$f = 0.75$
$z = 1.0$
$H = 1.0$
$D_r = 0$

ULTIMATE THRUST MOMENT INTERACTION

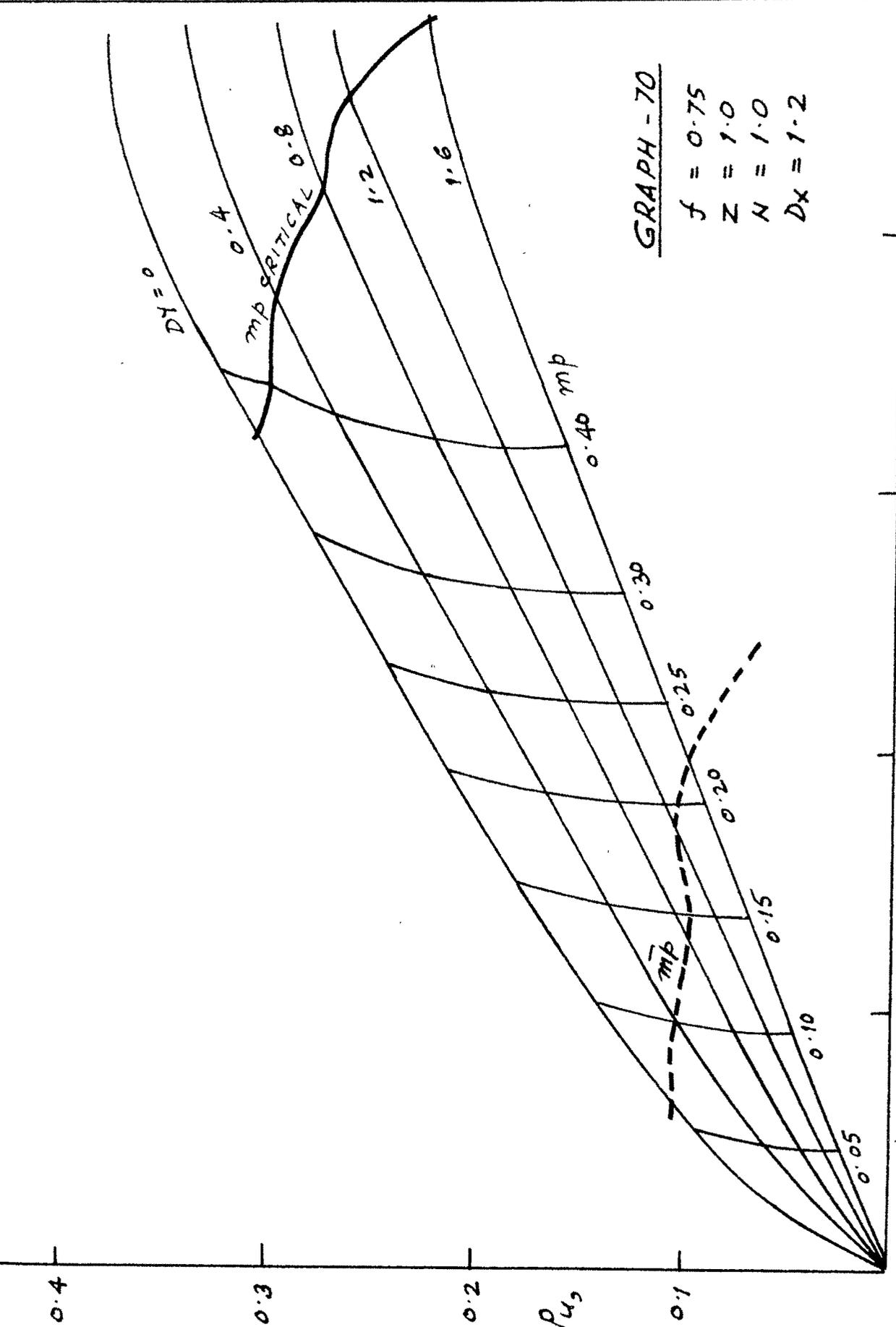237
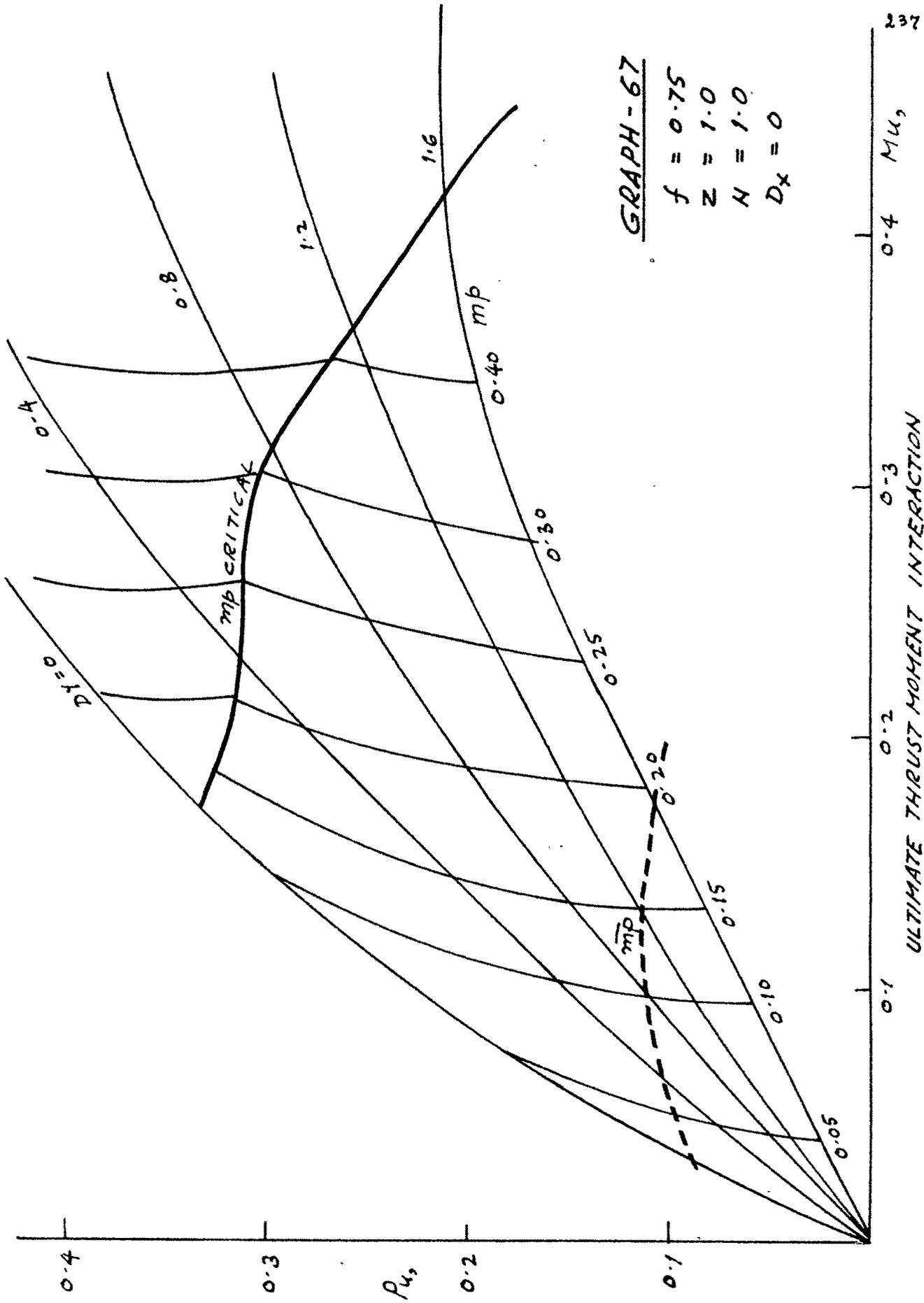
GRAPH - 68

$f = 0.75$
$Z = 1.0$
$N = 1.0$
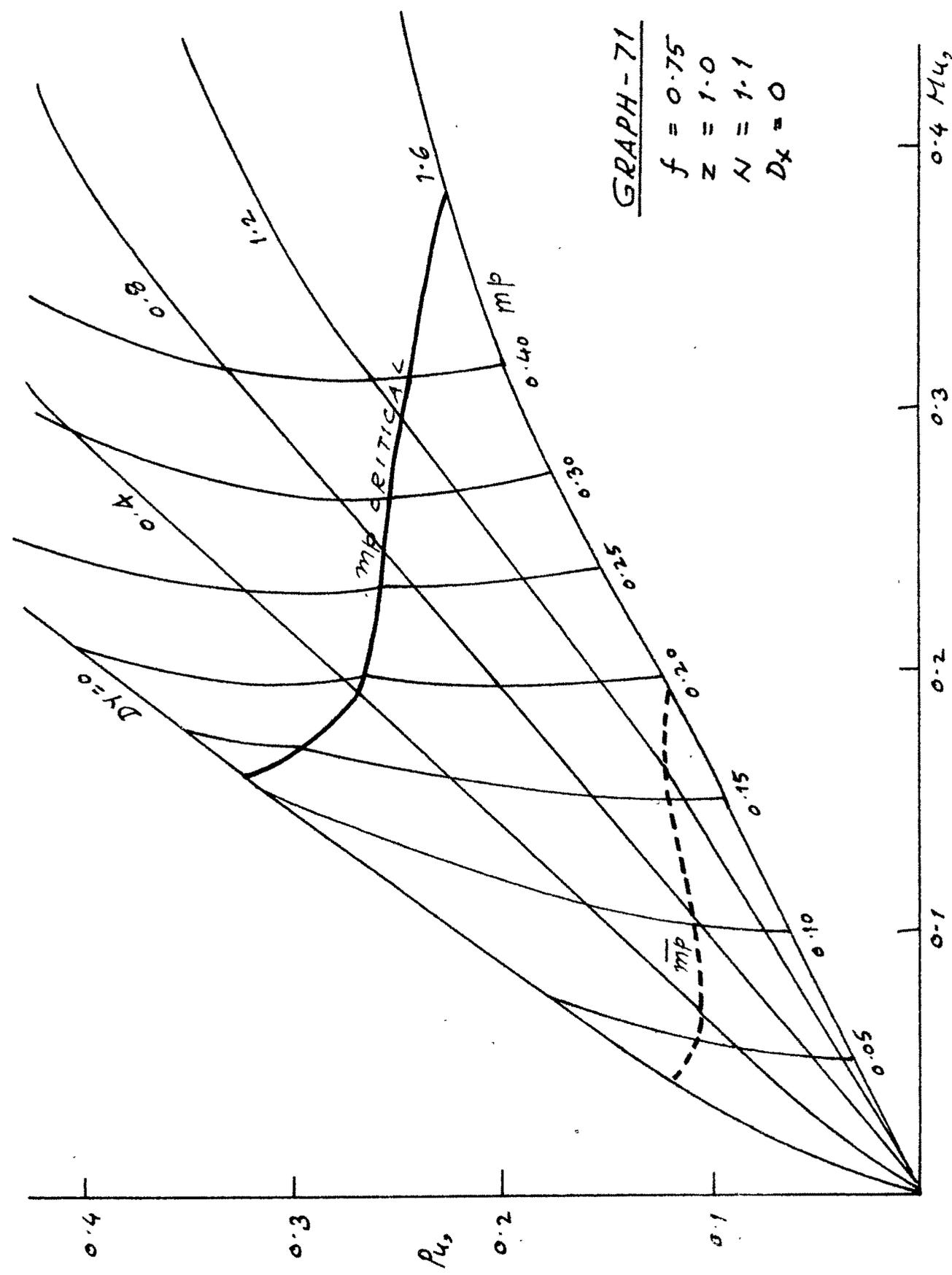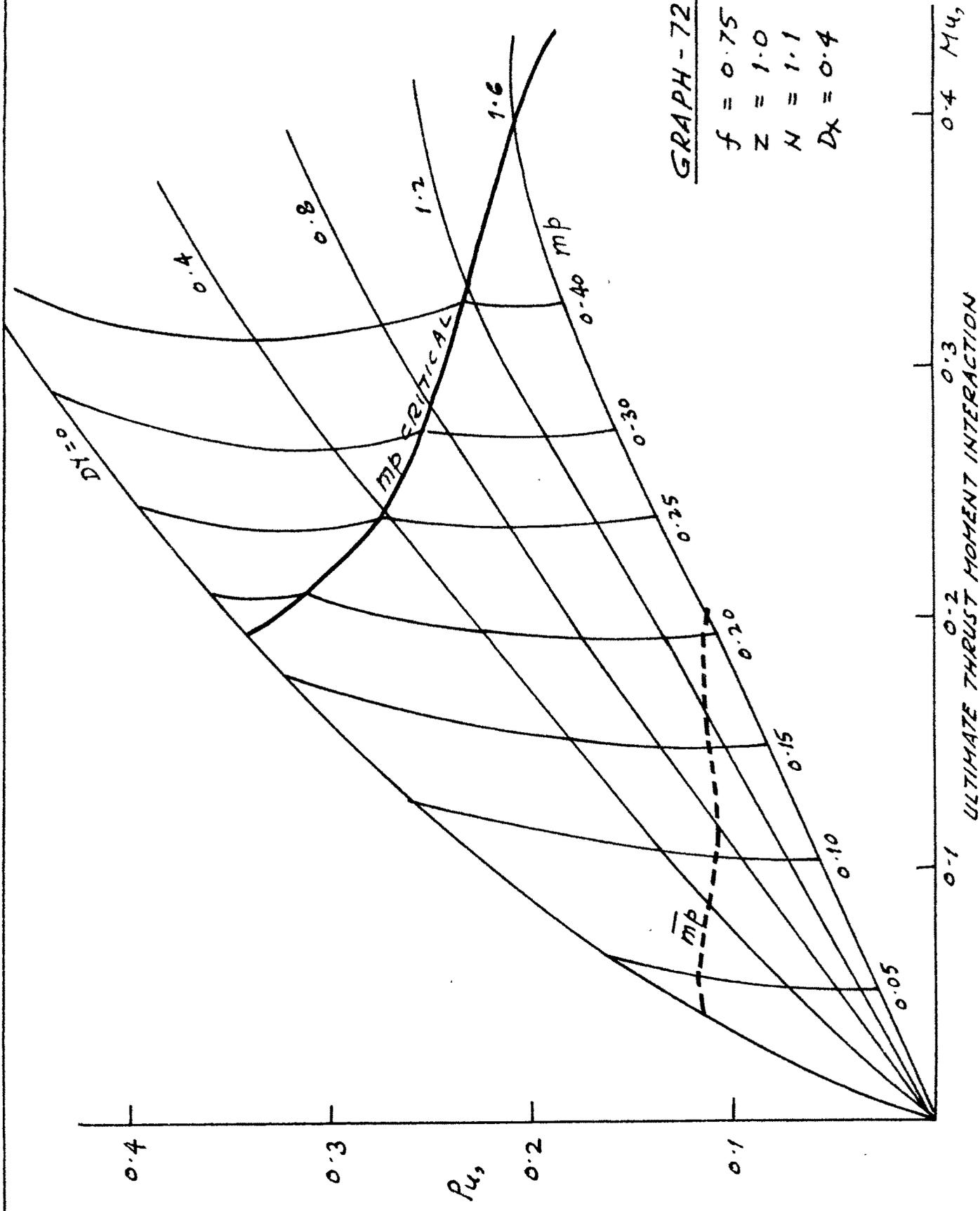$D_x = 0.4$

P_u,

M_u,

ULTIMATE THRUST MOMENT INTERACTION

mp CRITICAL

$\overline{mp}$

$D = 0$

mp

0.4

0.8

1.2

1.6

0.40

0.30

0.25

0.20

0.15

0.10

0.05

238
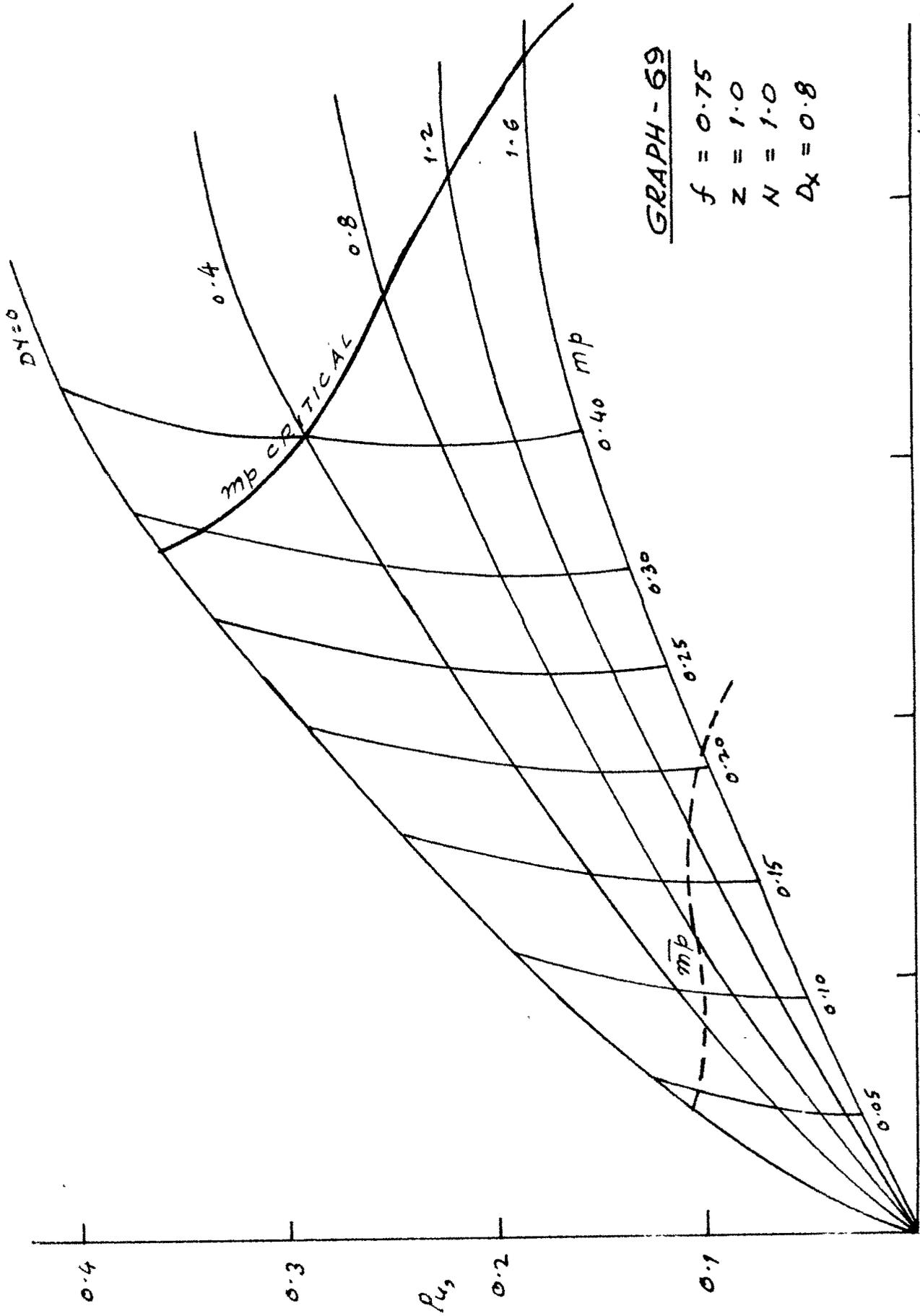
GRAPH - 69

$f = 0.75$
$z = 1.0$
$N = 1.0$
$D_x = 0.8$

M_{u_3}

ULTIMATE THRUST MOMENT INTERACTION

P_{u_3}

239

GRAPH - 70

$f = 0.75$
$Z = 1.0$
$N = 1.0$
$D_x = 1.2$

ULTIMATE THRUST MOMENT INTERACTION

P_{u_3}

M_{u_3}

240

GRAPH - 71

$f = 0.75$
$z = 1.0$
$N = 1.1$
$D_x = 0$

M_u,

ULTIMATE THRUST MOMENT INTERACTION

P_u,

m_p

m_p CRITICAL

$\overline{m_p}$

$D_y = 0$

1.6
1.2
1.1
0.8
0.4

0.40
0.30
0.25
0.20
0.15
0.10
0.05

241

GRAPH - 72

$f = 0.75$
$z = 1.0$
$H = 1.1$
$Dx = 0.4$

242

GRAPH-73

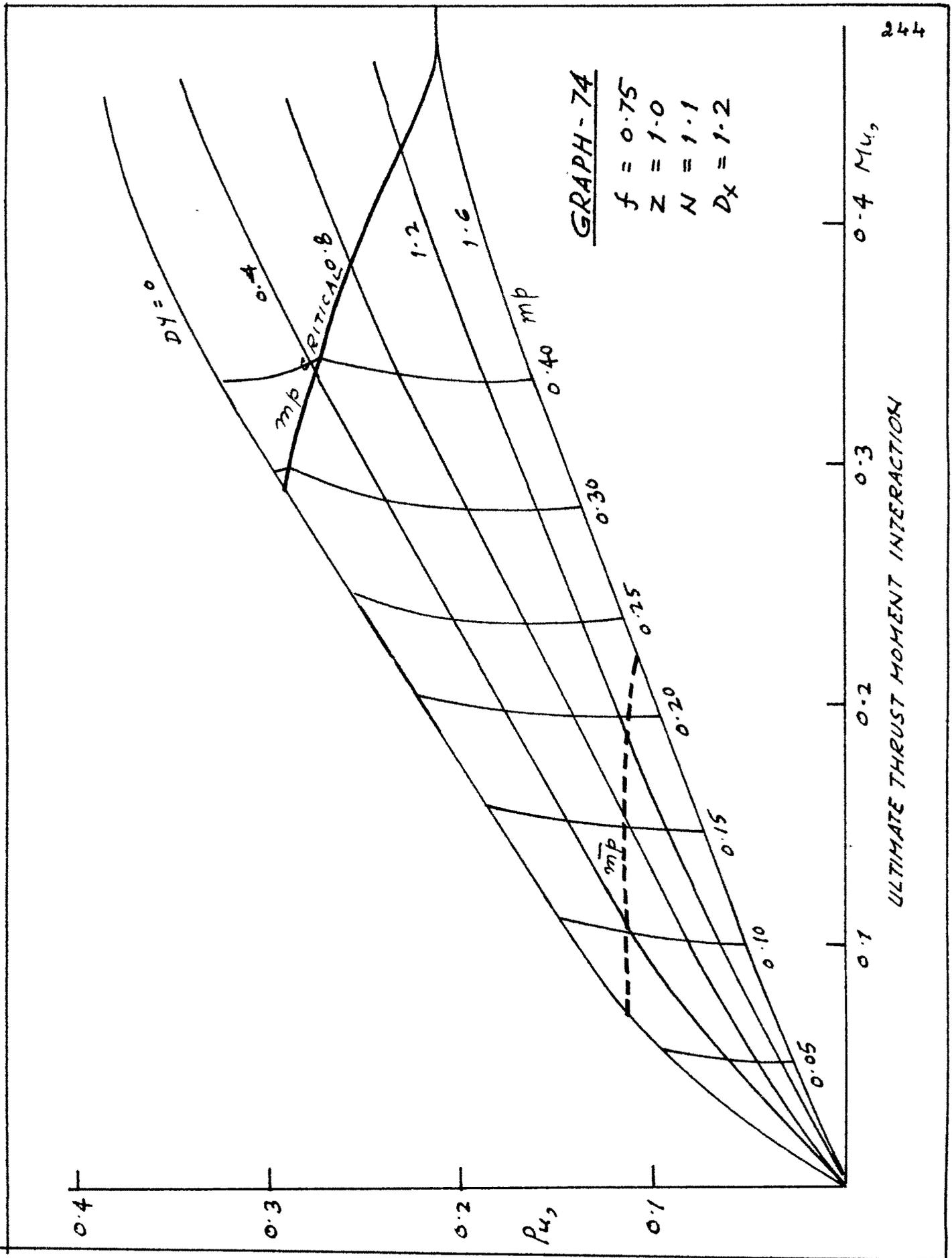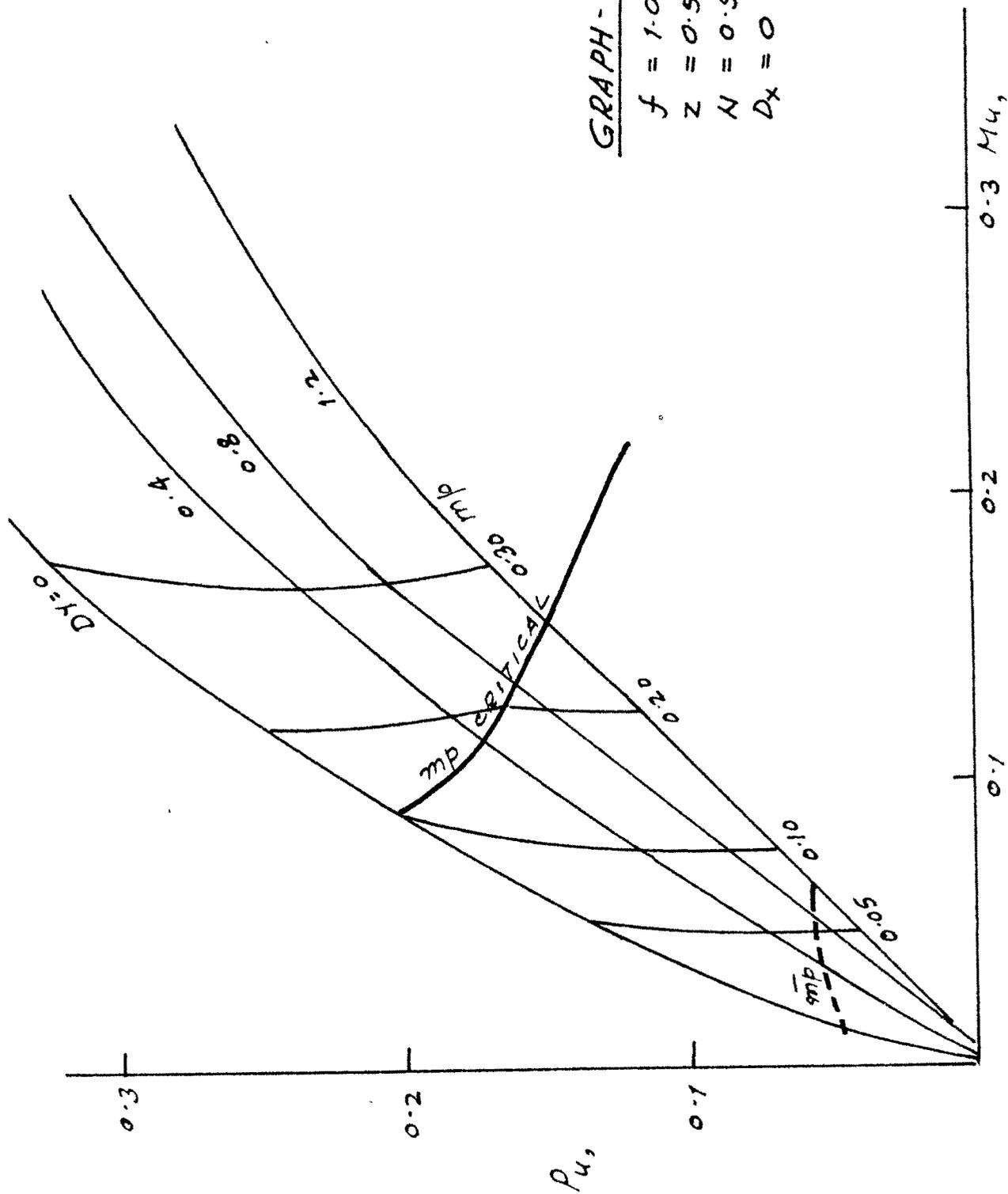$f = 0.75$
$z = 1.0$
$N = 1.1$
$D_x = 0.8$

ULTIMATE THRUST MOMENT INTERACTION

243
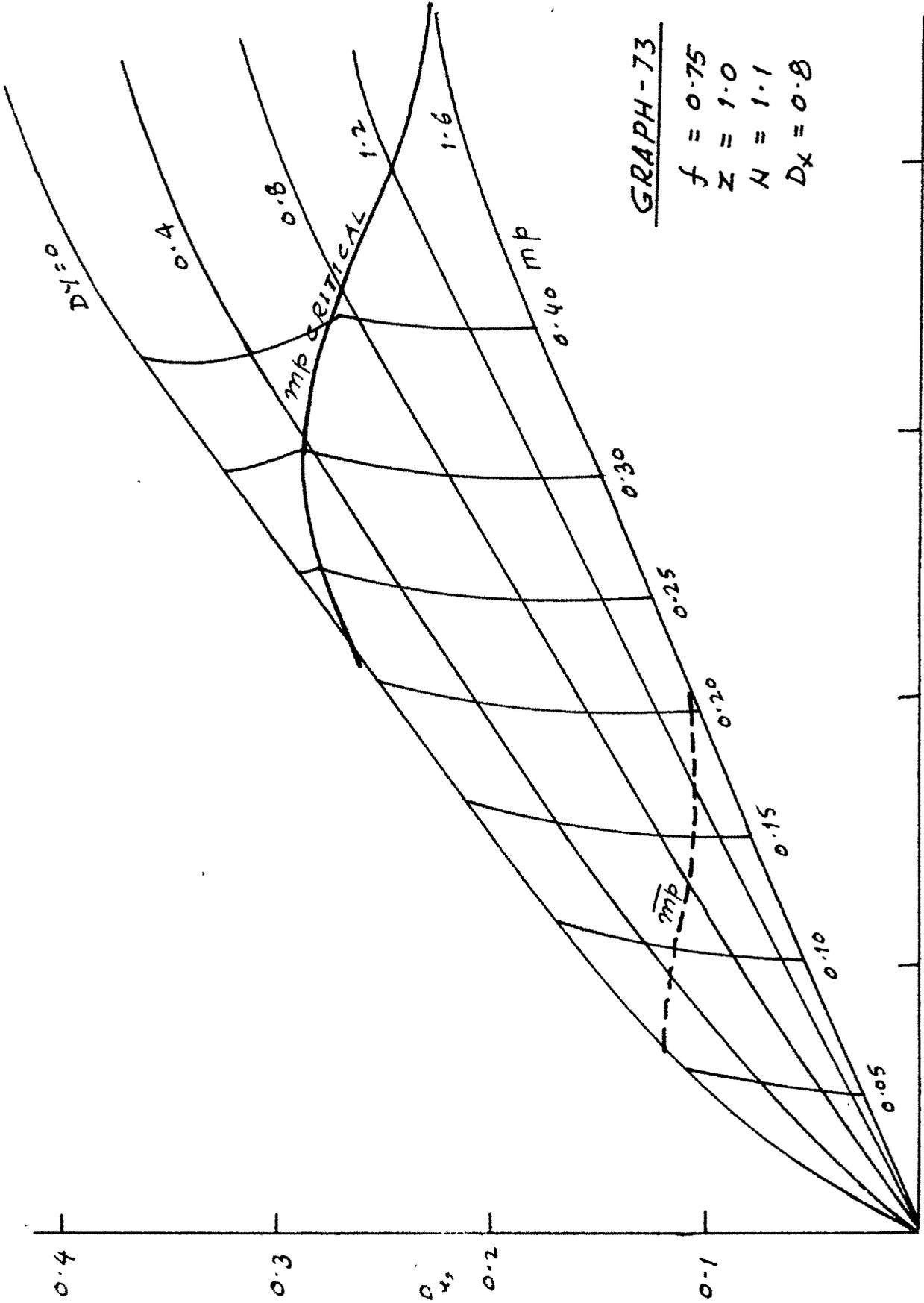
GRAPH-74

f = 0.75
z = 1.0
N = 1.1
D_x = 1.2

ULTIMATE THRUST MOMENT INTERACTION

Mu,

Pu,

244

GRAPH - 75

$f = 1.0$
$z = 0.5$
$N = 0.9$
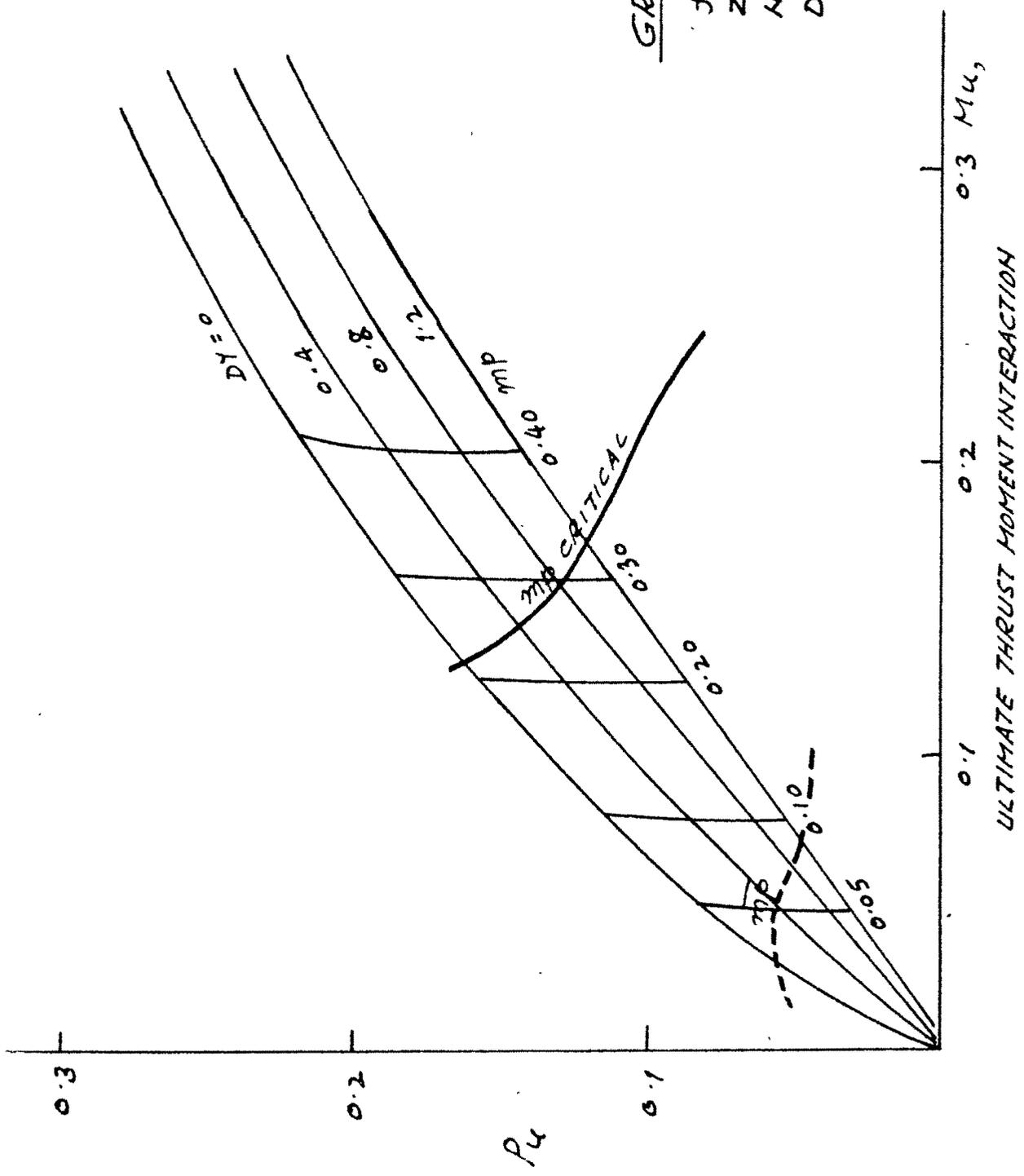$D_t = 0$

ULTIMATE THRUST MOMENT INTERACTION

P_u,

M_u,

245

GRAPH-76

$f = 1.0$
$z = 0.5$
$N = 0.9$
$D_x = 0.4$

M_u,

ULTIMATE THRUST MOMENT INTERACTION

P_u,

246
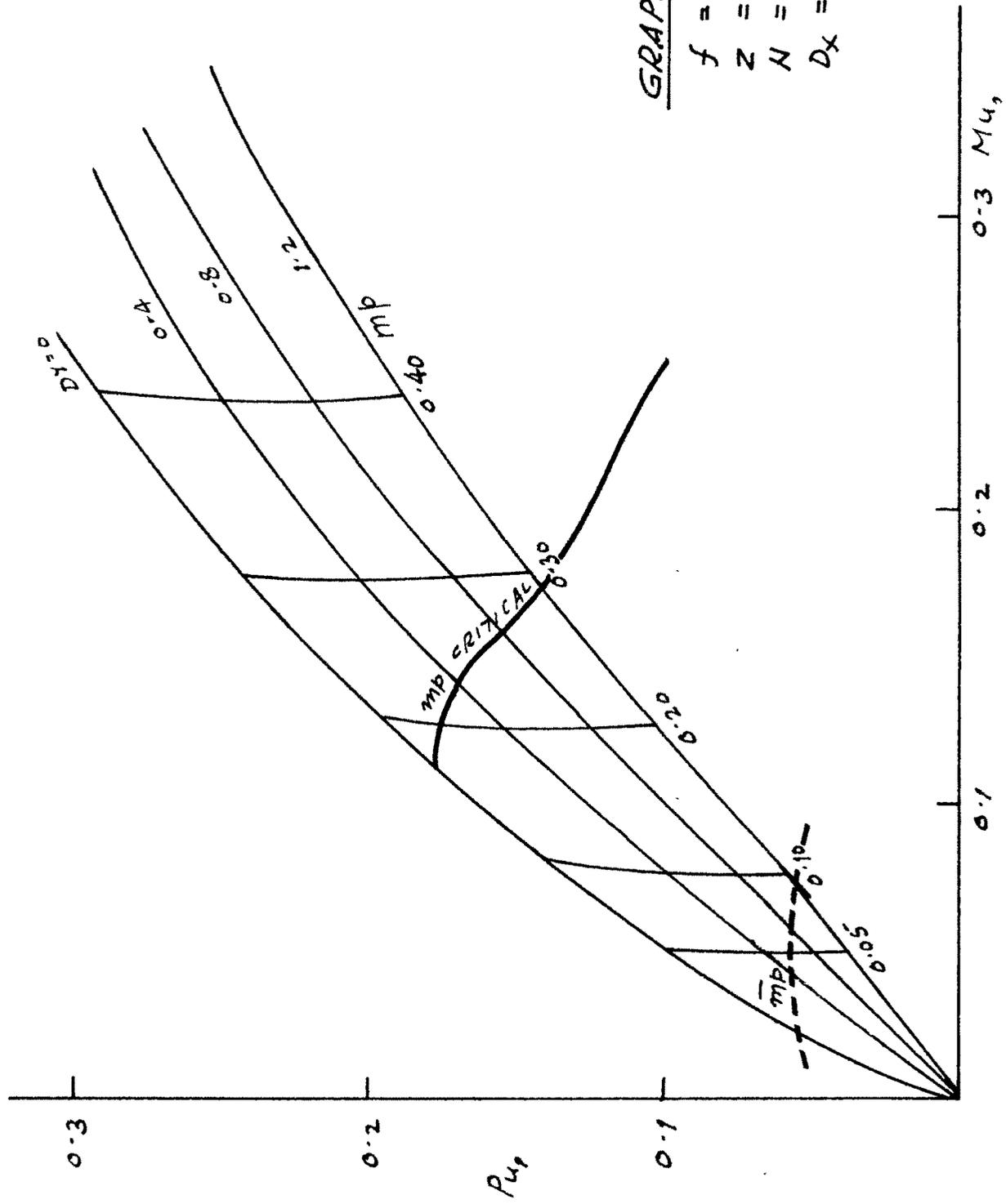
ULTIMATE THRUST MOMENT INTERACTION

GRAPH - 77

f = 1.0
z = 0.5
H = 0.9
Dx = 0.8
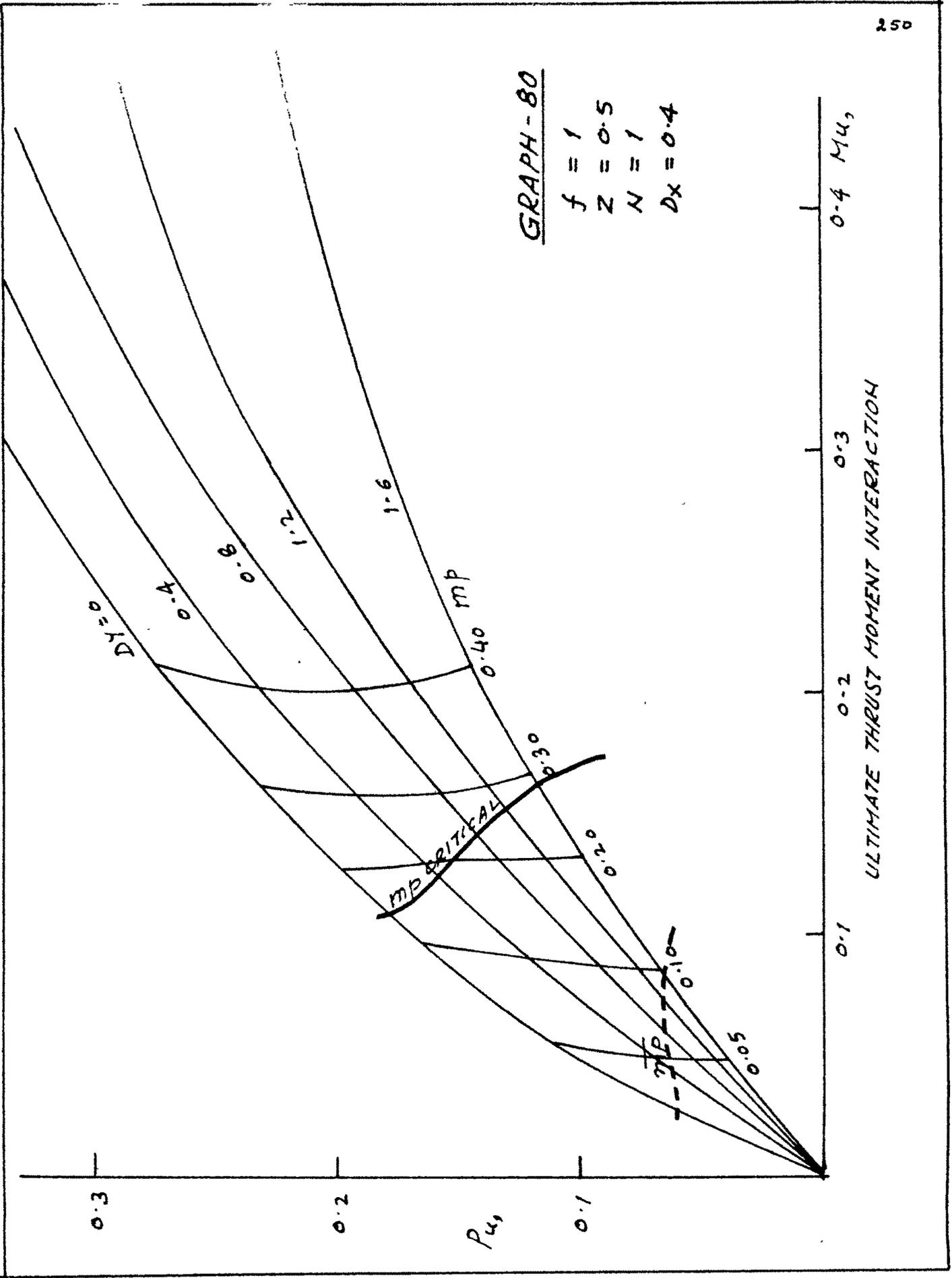
247

GRAPH - 78

$f = 1$
$Z = 0.5$
$N = 0.9$
$D_x = 1.2$

ULTIMATE THRUST MOMENT INTERACTION

M_u,

P_u,

$DY = 1.0$

0.8

0.4

1.2

mp

0.40

$mp\ CRITICAL$

0.30

0.20

mp

0.10

0.05

0.1

0.2

0.3

248

GRAPH-79

$f = 1$
$z = 0.5$
$N = 1$
$D_x = 0$

ULTIMATE THRUST MOMENT INTERACTION

M_u,

P_u,

mp CRITICAL

mp

$\overline{mp}$

$D_x = 0$

249
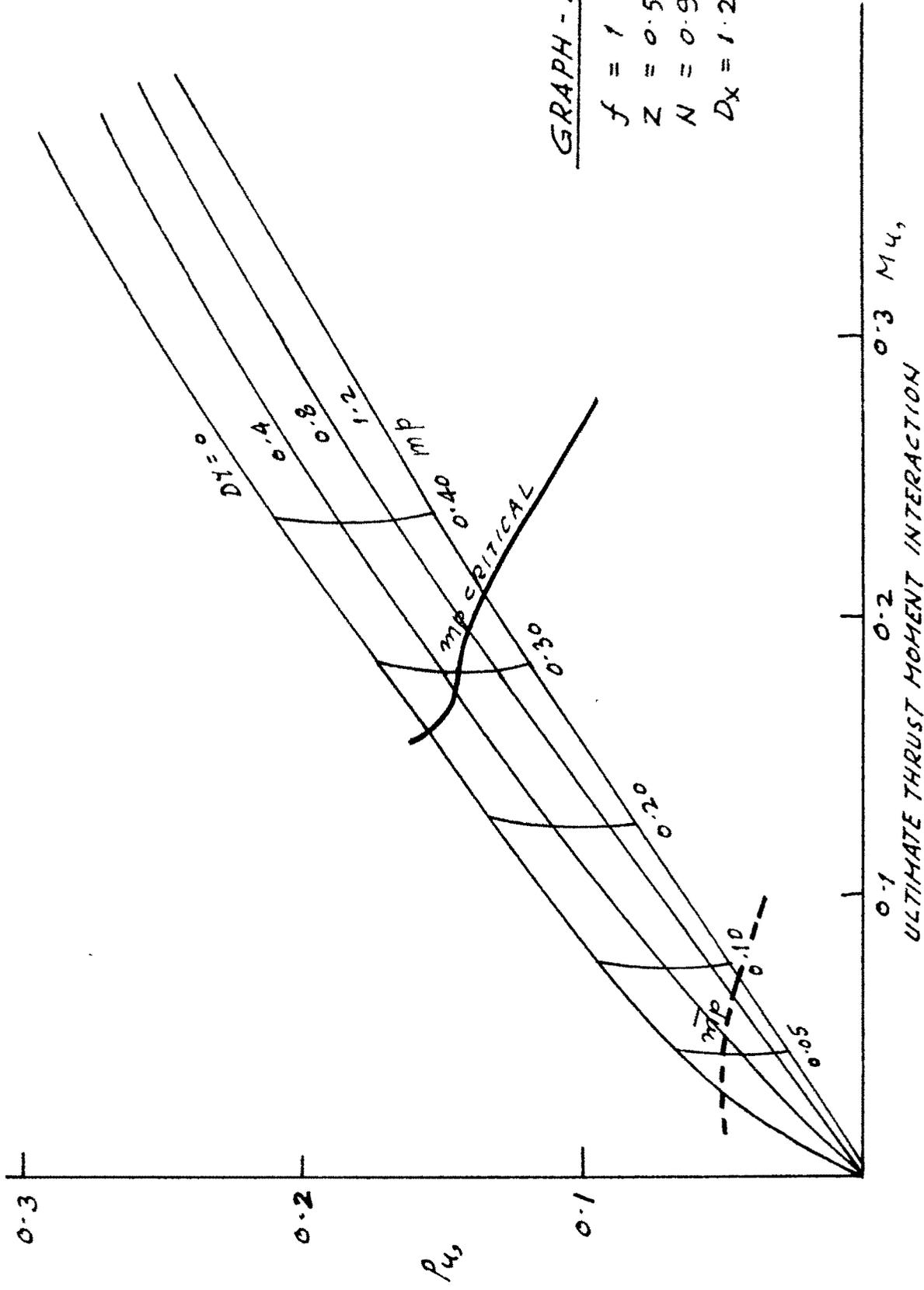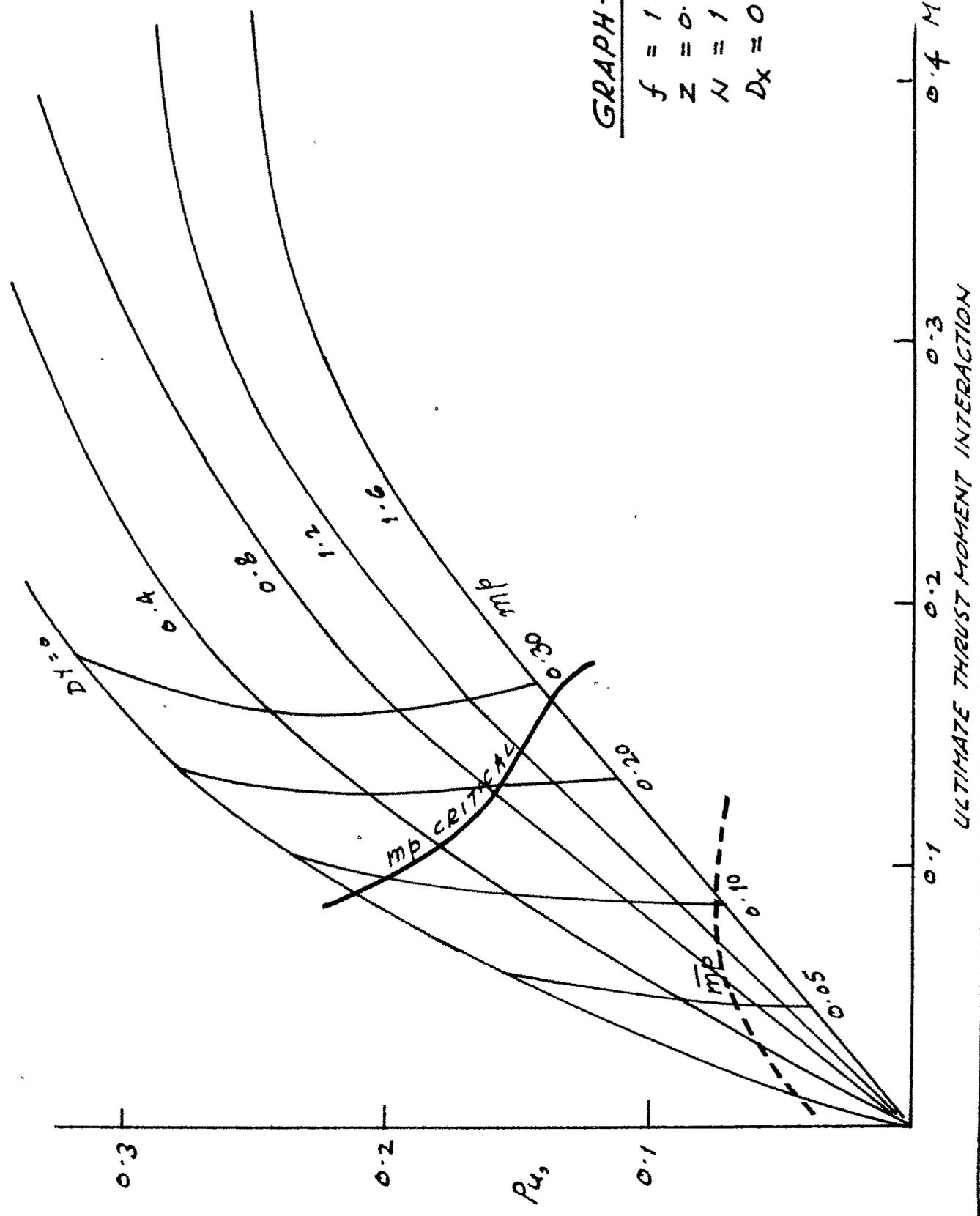
GRAPH - 80

$f = 1$
$z = 0.5$
$N = 1$
$Dx = 0.4$

ULTIMATE THRUST MOMENT INTERACTION

P_u,

M_u,

250

GRAPH – 81

$f = 1$
$z = 0.5$
$N = 1$
$D_x = 0.8$

$DT = 0$
0.4
0.8
1.2
1.6

mp

0.40
0.30
0.20
0.10
0.05

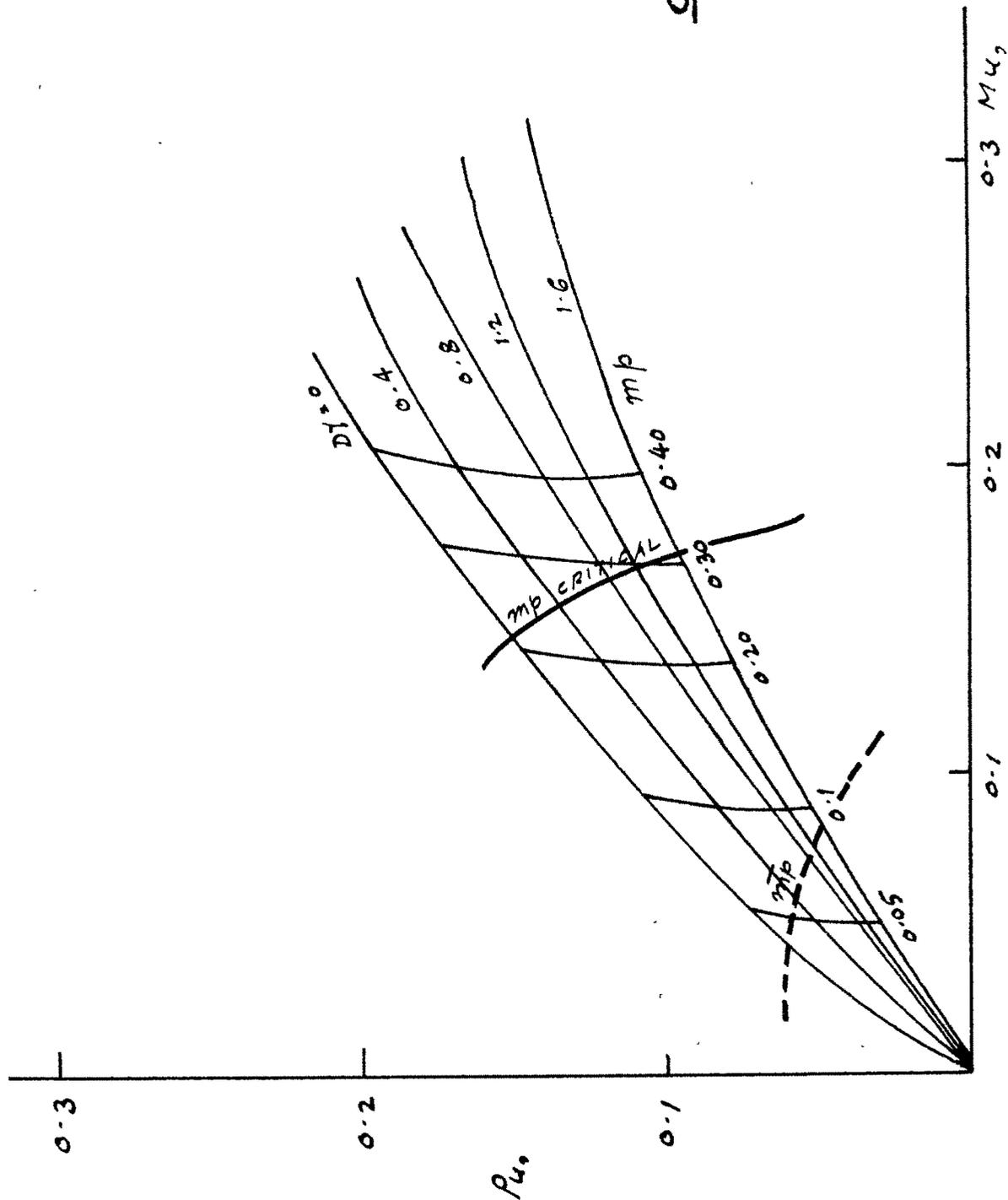mp CRITICAL

$\overline{mp}$

$Pu,$

0.3
0.2
0.1

0.1 0.2 0.3 $Mu,$

ULTIMATE THRUST MOMENT INTERACTION

251

GRAPH-82

$f = 1$
$z = 0.5$
$N = 1$
$D_x = 1.2$

ULTIMATE THRUST MOMENT INTERACTION

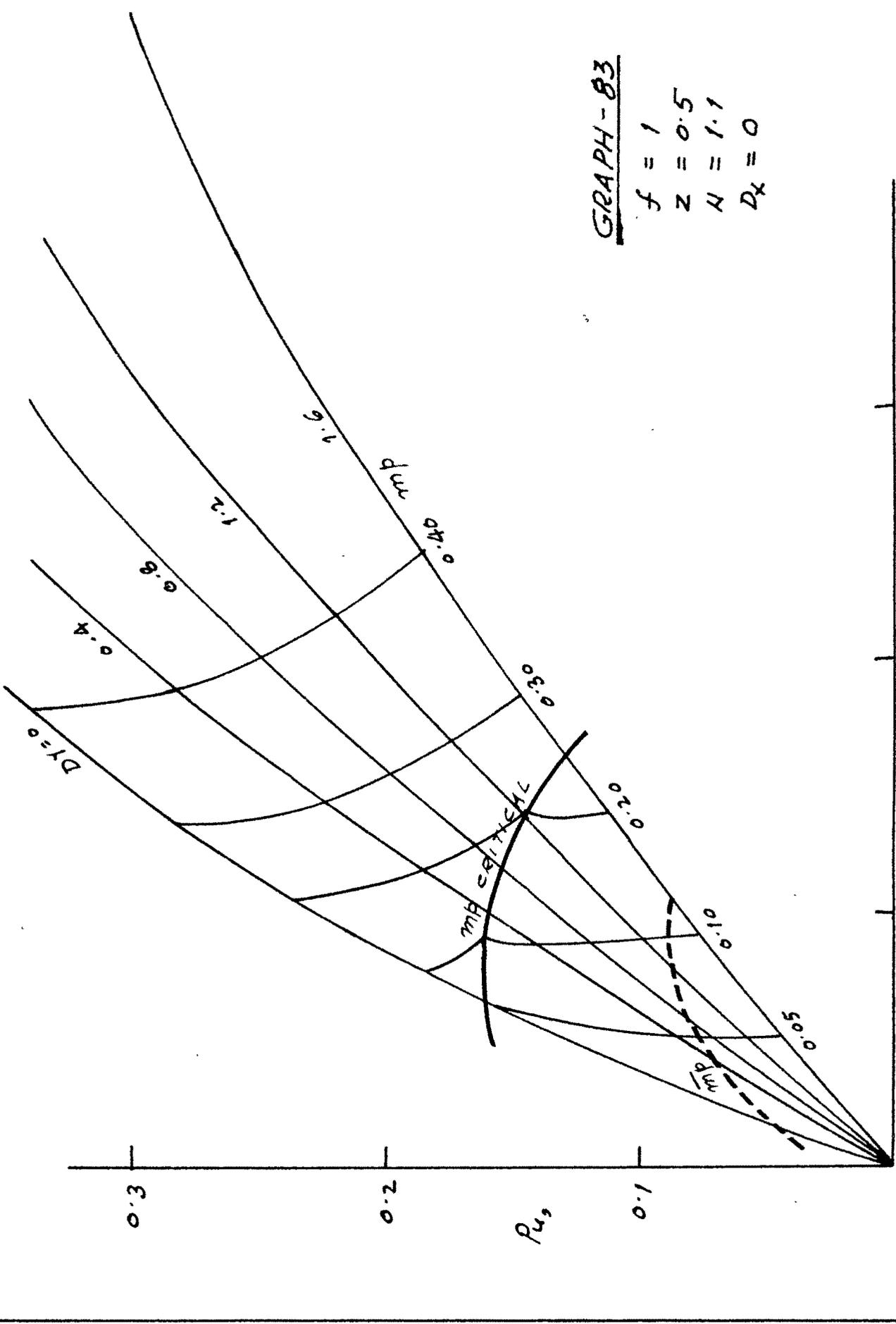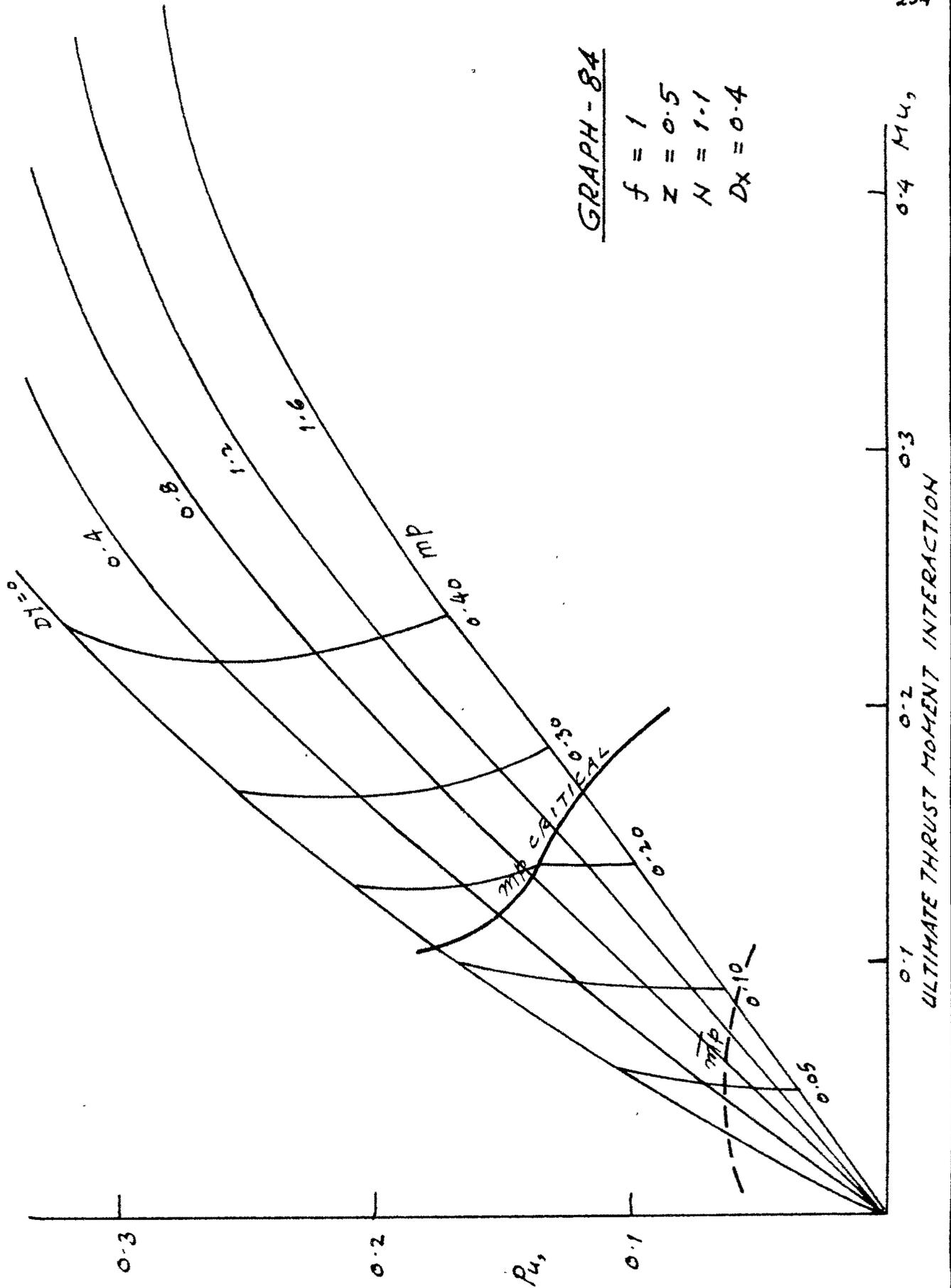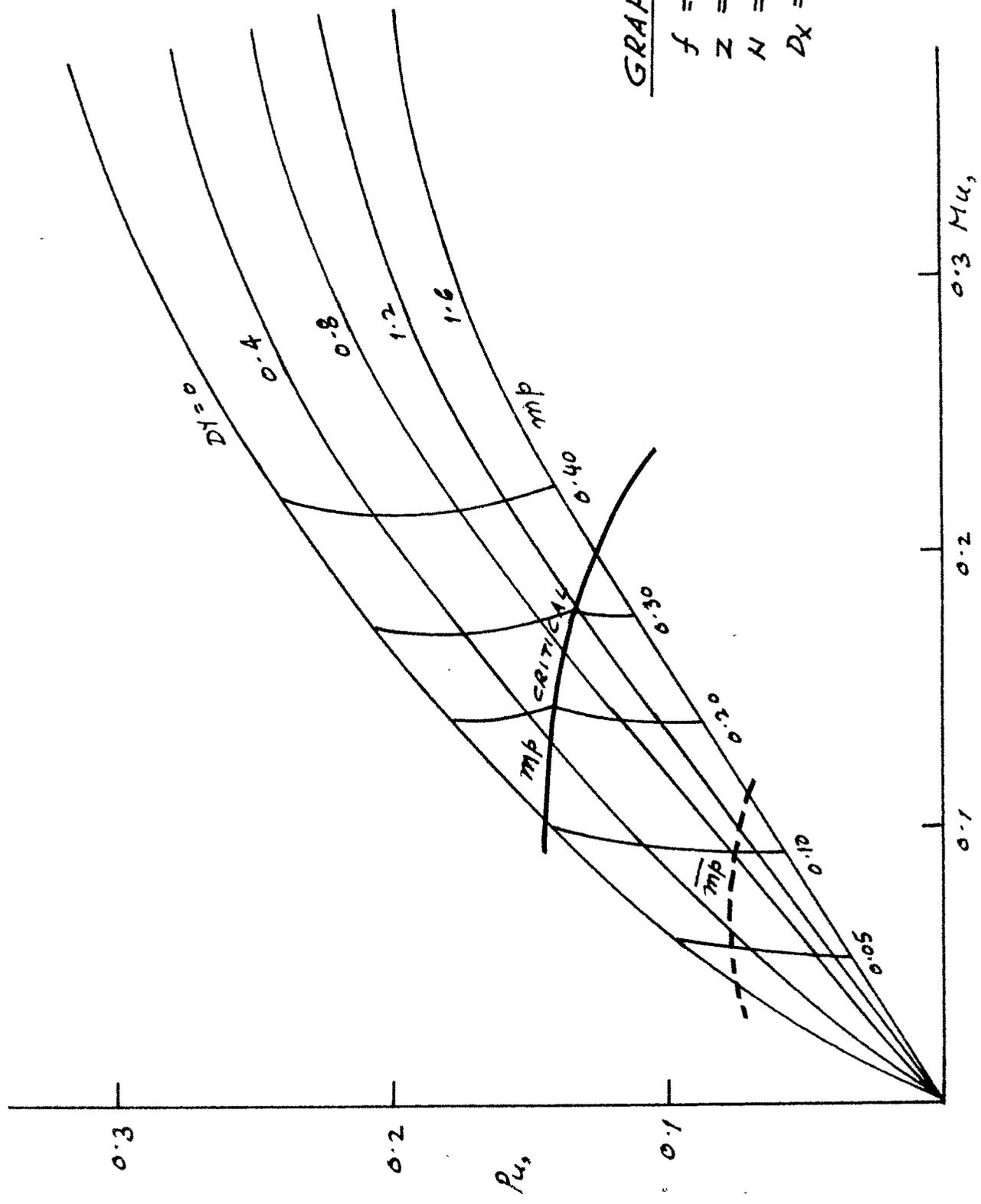Pu_o

Mu_o

252

GRAPH-83

$f = 1$
$z = 0.5$
$\lambda = 1.1$
$D_x = 0$

ULTIMATE THRUST MOMENT INTERACTION

GRAPH - 84

$f = 1$
$z = 0.5$
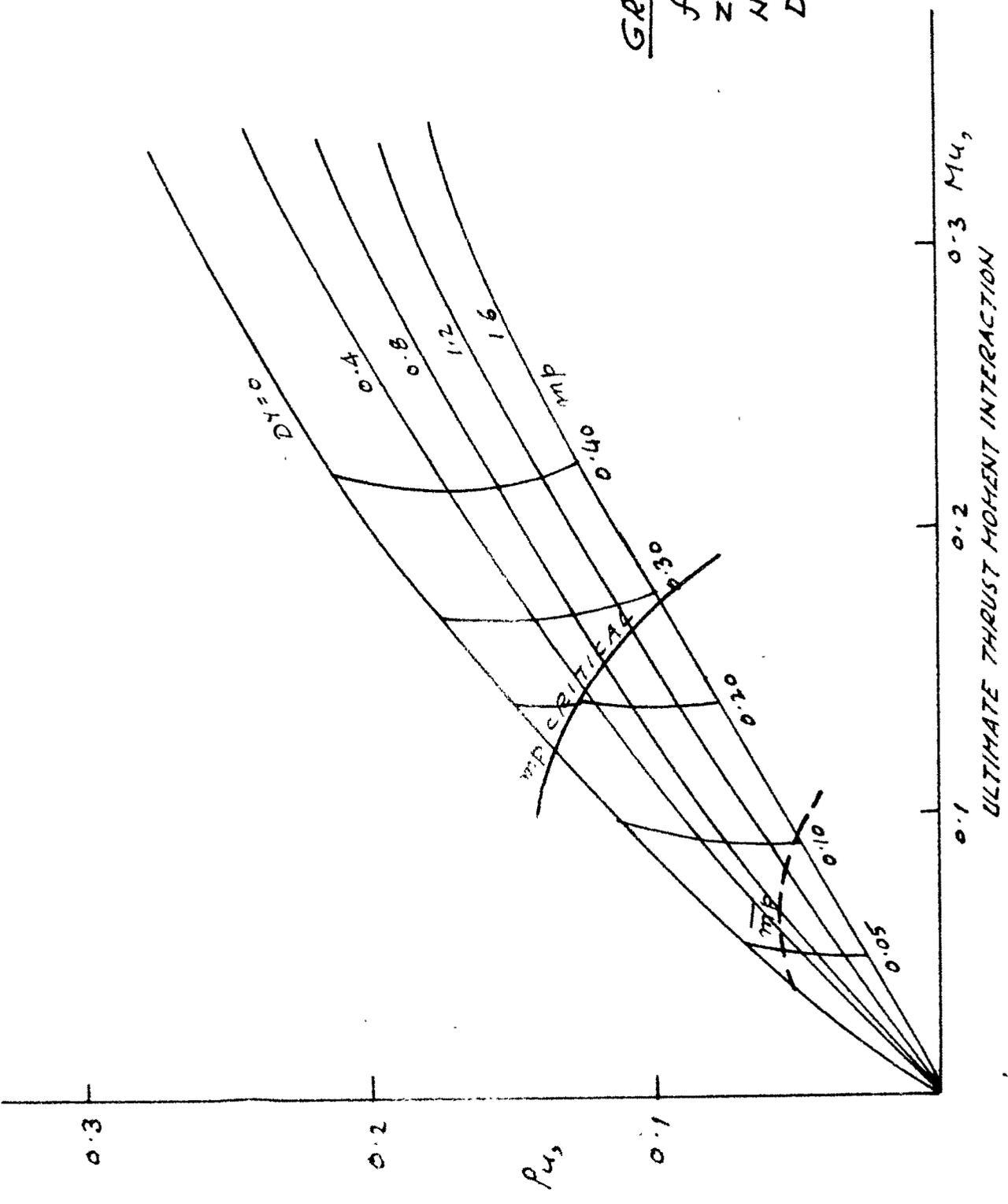$H = 1.1$
$Dx = 0.4$

ULTIMATE THRUST MOMENT INTERACTION

$Mu,$

$Pu,$

Mb CRITICAL

mp

mp

$DY = 0$

0.4
0.8
1.2
1.6

0.40
0.30
0.20
0.10
0.05

0.3
0.2
0.1

0.1 0.2 0.3 0.4

254

GRAPH - 85

$f = 0$
$z = 0.5$
$N = 1.1$
$D_x = 0.8$

ULTIMATE THRUST MOMENT INTERACTION

GRAPH - 86

$f = 1$
$z = 0.5$
$N = 1.1$
$D\alpha = 1.2$
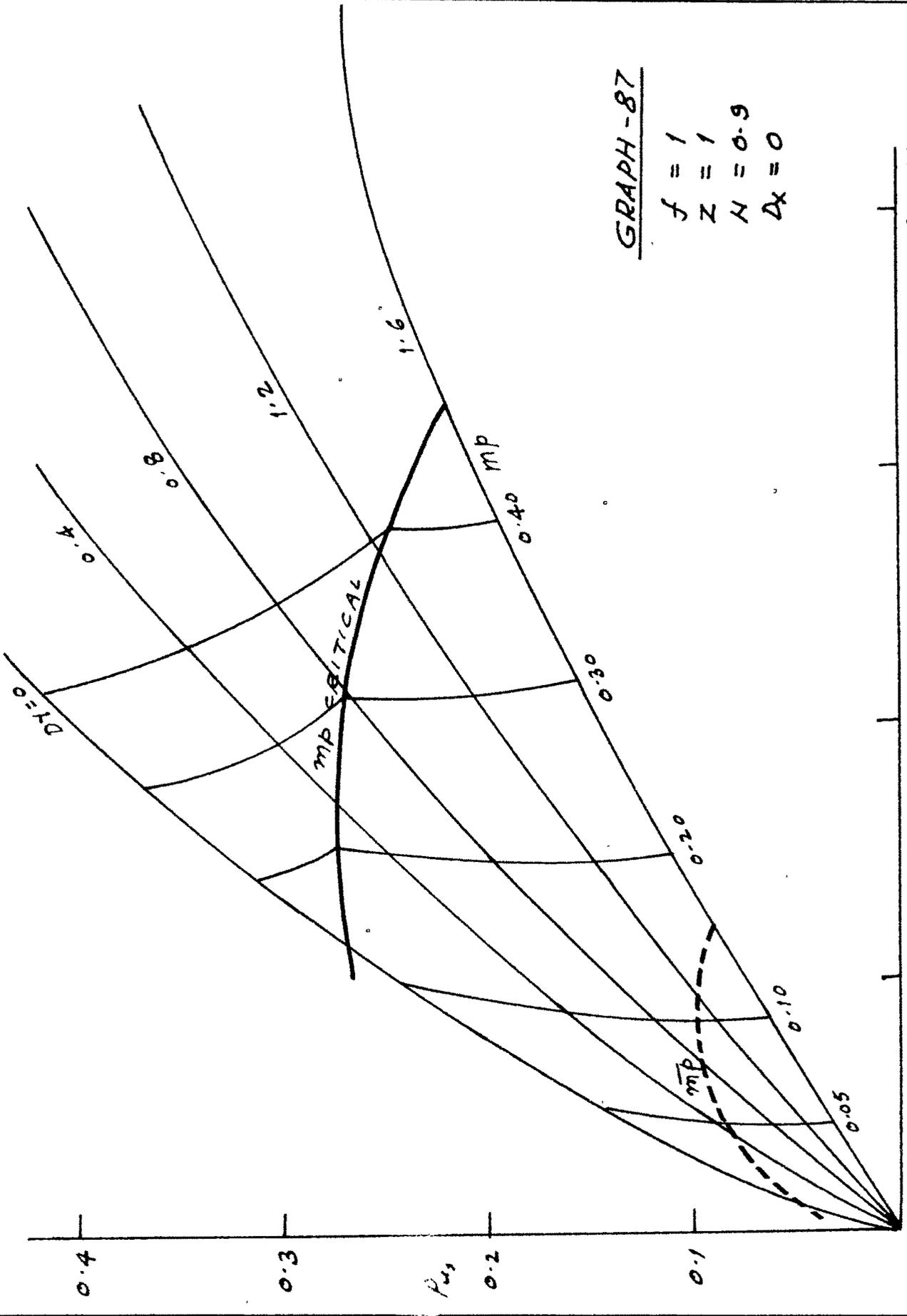
ULTIMATE THRUST MOMENT INTERACTION

$Mu,$

$Pu,$

256
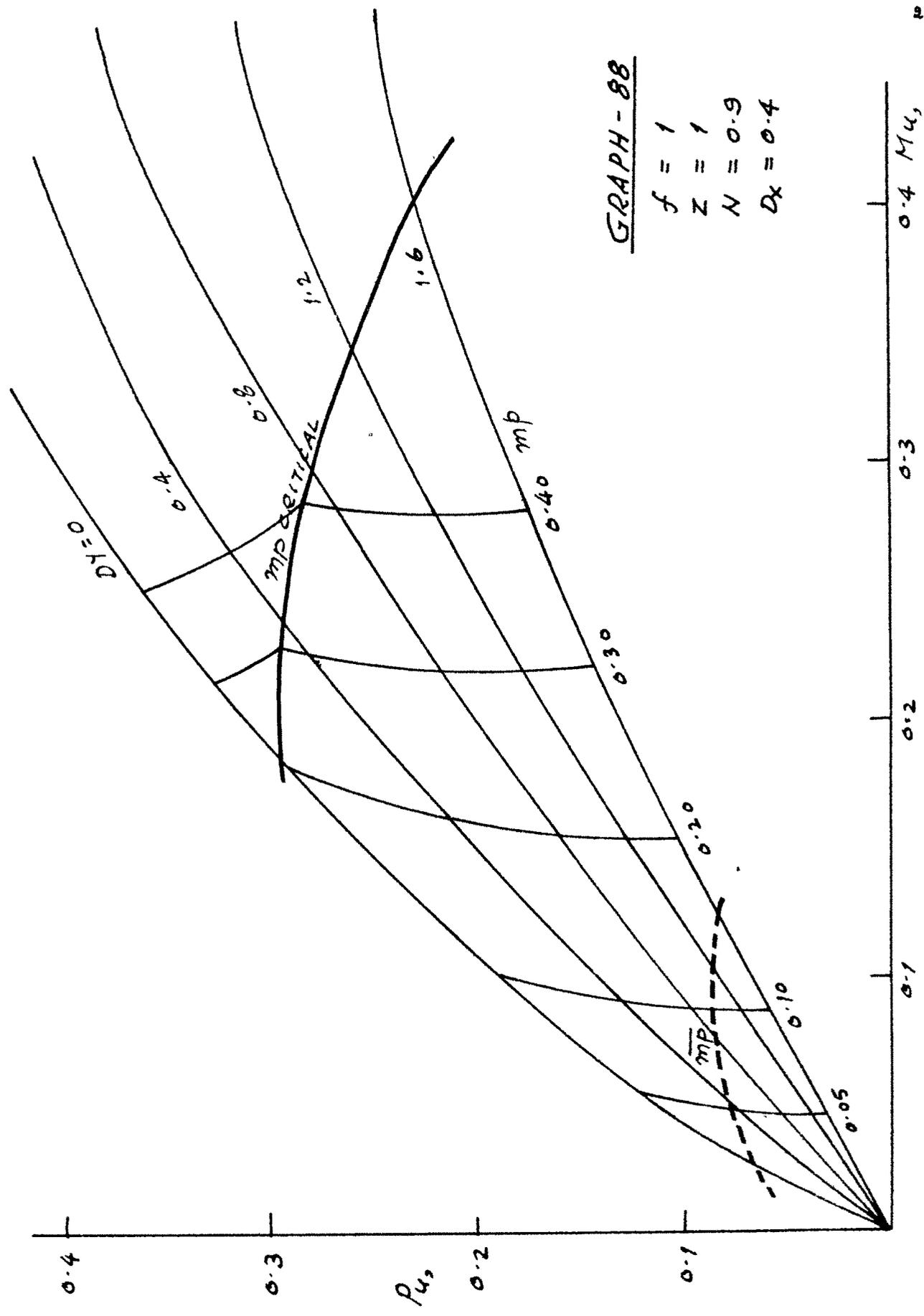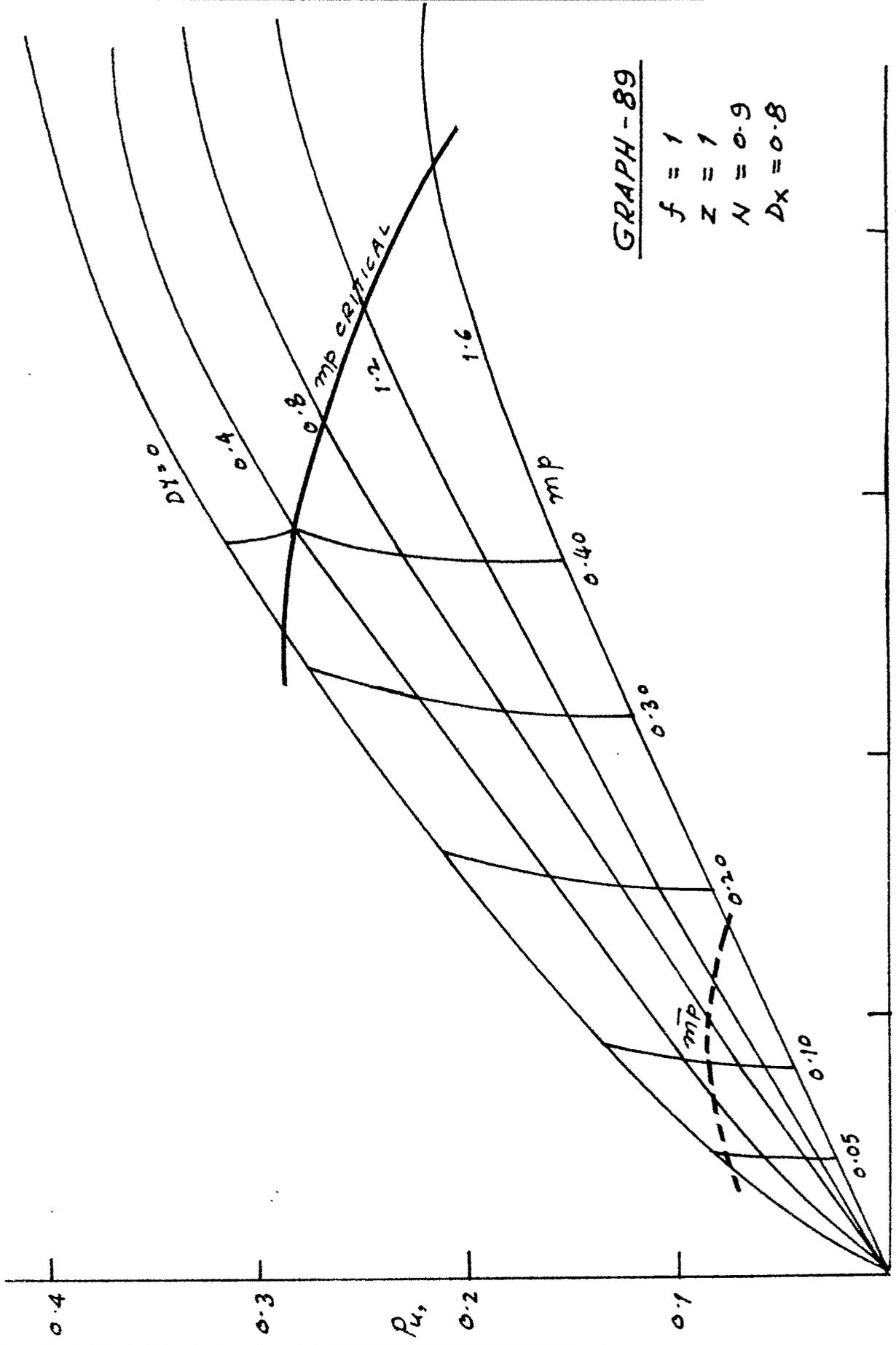
GRAPH-87

$f = 1$
$z = 1$
$H = 0.9$
$D_x = 0$

ULTIMATE THRUST MOMENT INTERACTION

257

GRAPH - 88

$f = 1$
$z = 1$
$N = 0.9$
$D_x = 0.4$

ULTIMATE THRUST MOMENT INTERACTION

258

GRAPH - 89

$f = 1$
$z = 1$
$N = 0.9$
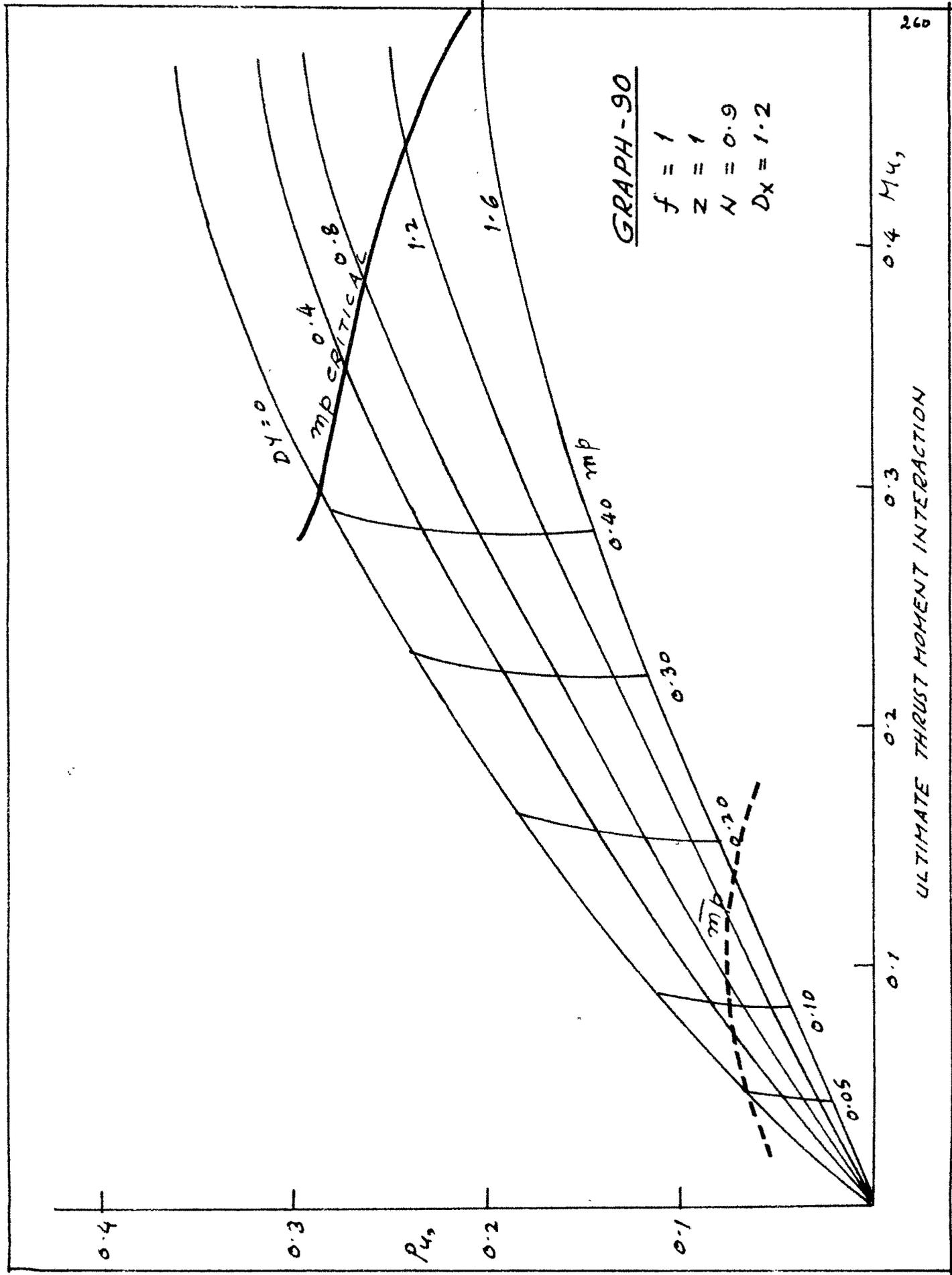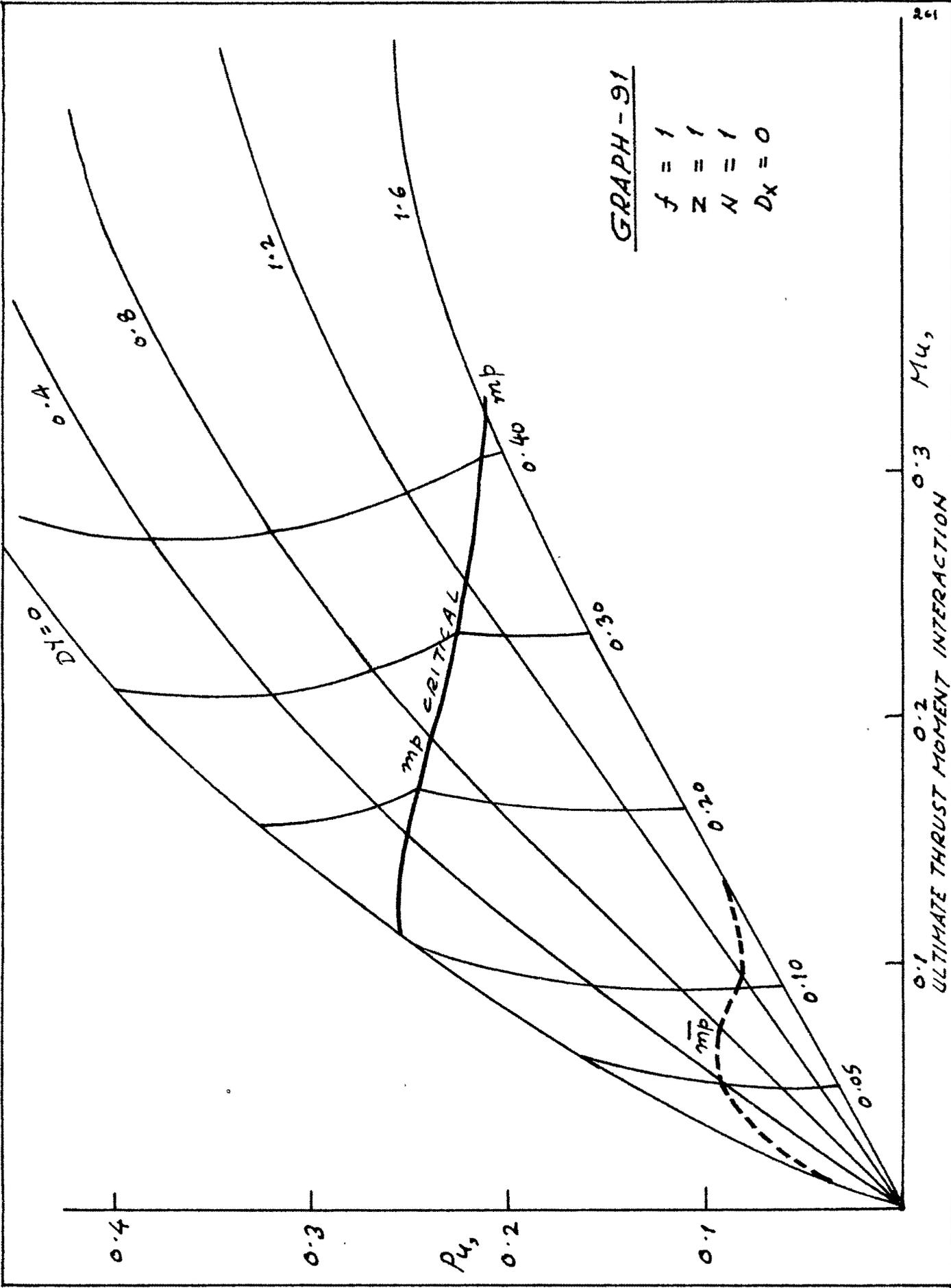$D_x = 0.8$

ULTIMATE THRUST MOMENT INTERACTION

Mu_3

Pu,

DY $= 0$

mp CRITICAL

mp

$\overline{mp}$

0.8   1.2   1.6

0.4

0.40

0.30

0.20

0.10

0.05

0   0.1   0.2   0.3   0.4

0   0.1   0.2   0.3   0.4

259

GRAPH-90

$f = 1$
$z = 1$
$N = 0.9$
$D_x = 1.2$

M_u,

ULTIMATE THRUST MOMENT INTERACTION

P_u,

$D_Y = 0$

mp CRITICAL

0.4

0.8

1.2

1.6

mp

0.40

0.30

0.20

0.10

0.05

$\sqrt{mp}$

260

GRAPH - 91
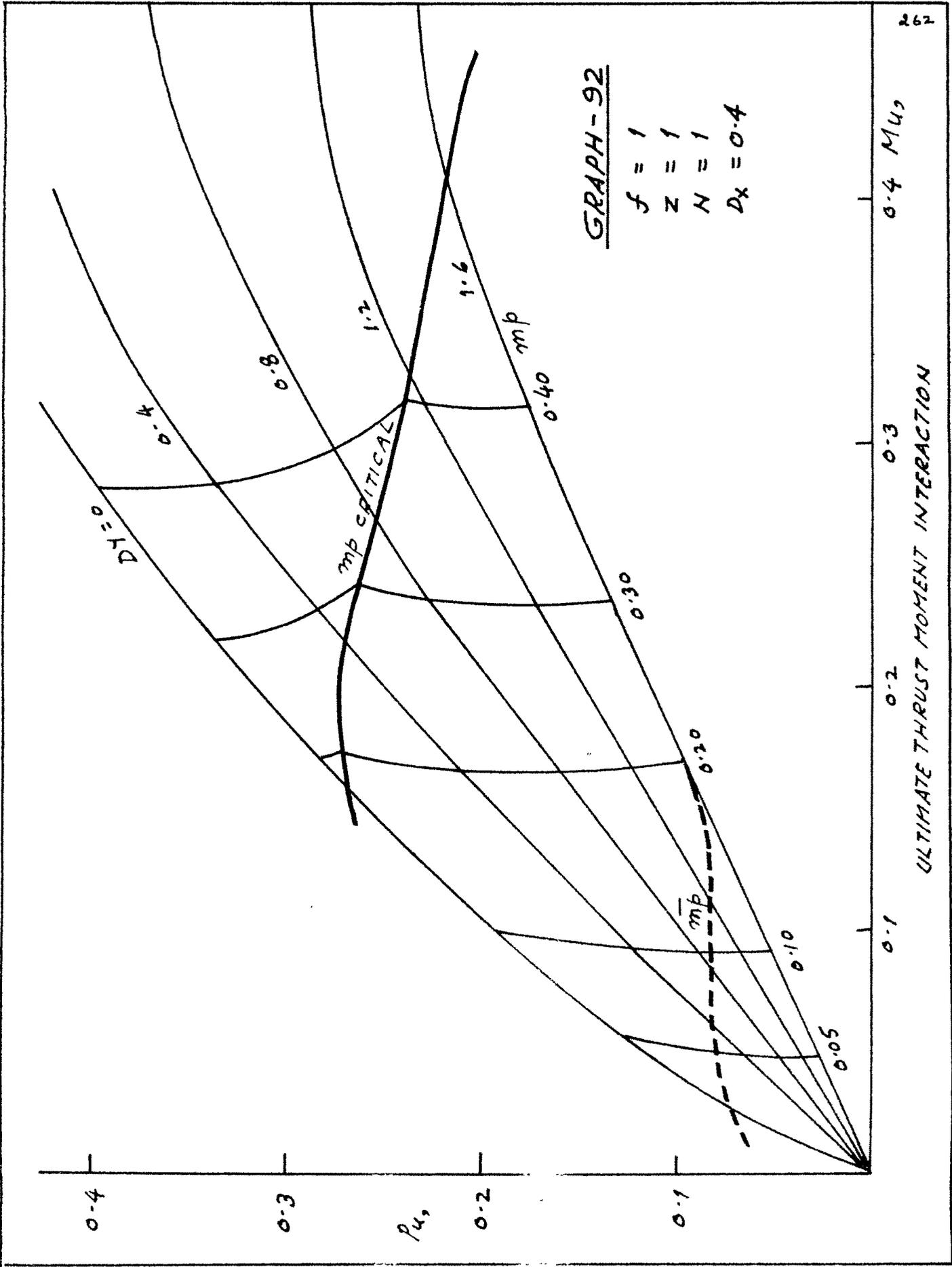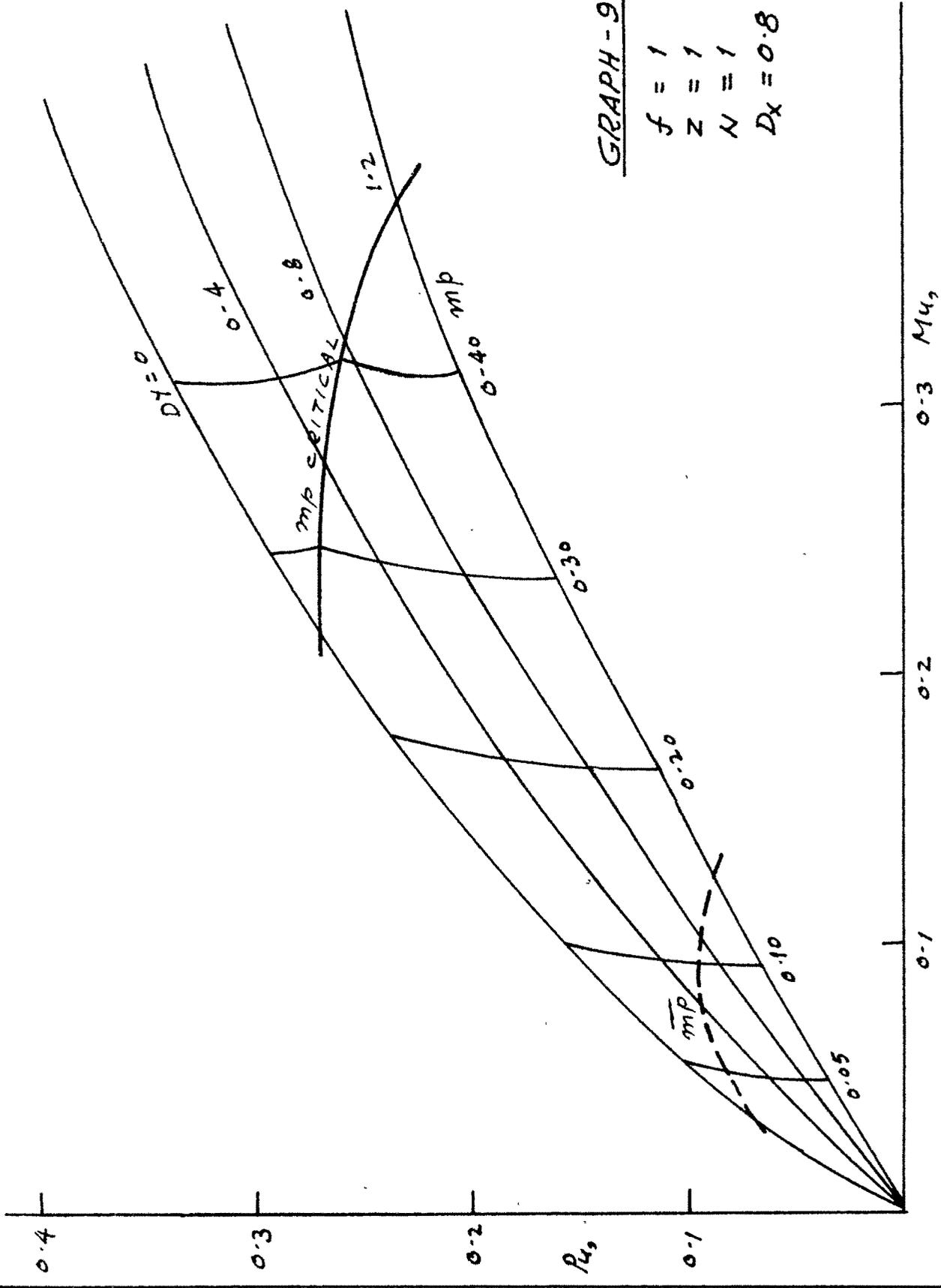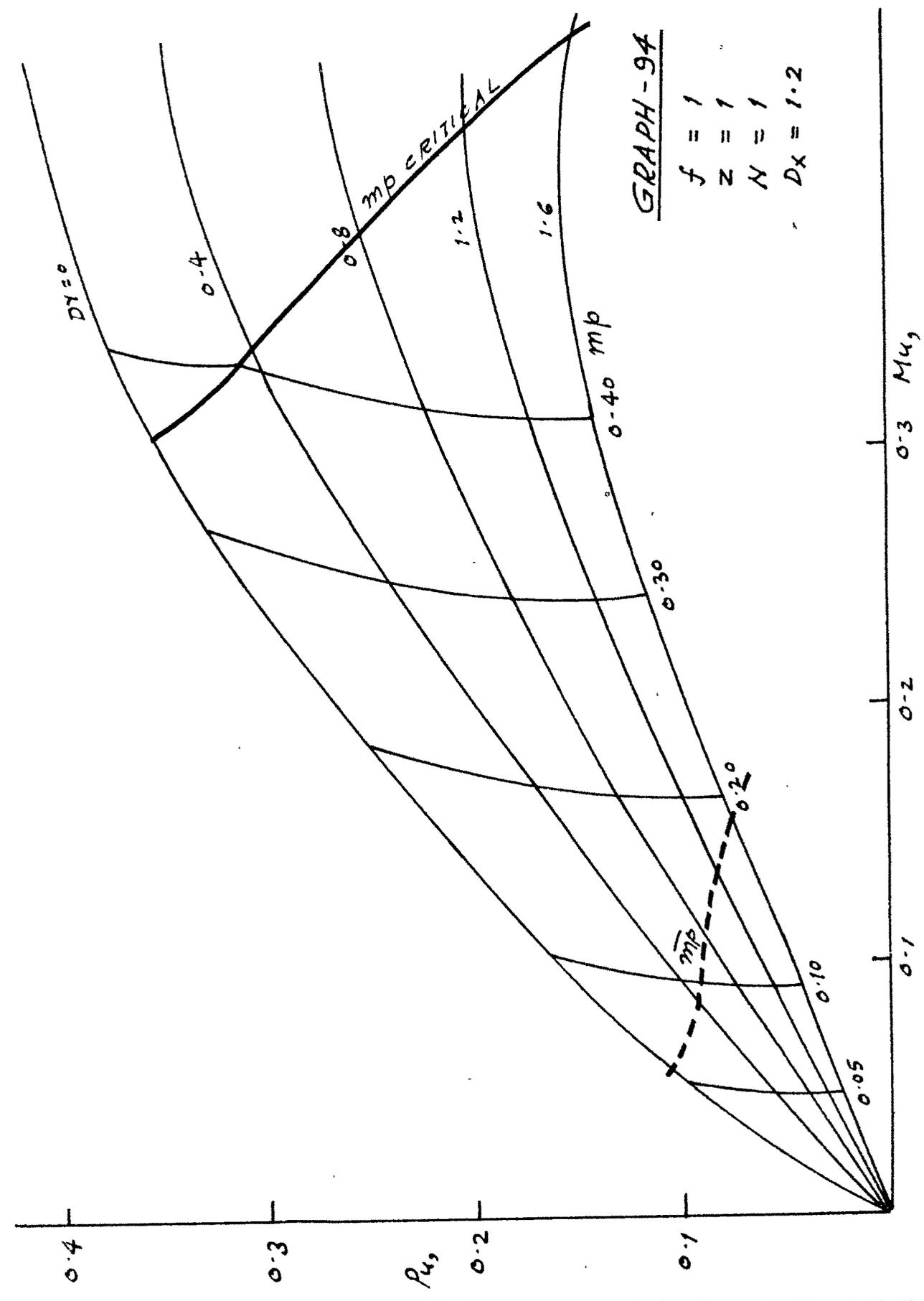
$f = 1$
$Z = 1$
$N = 1$
$D_x = 0$

ULTIMATE THRUST MOMENT INTERACTION

Mu,

Pu,

GRAPH-92

$f = 1$
$z = 1$
$N = 1$
$D_x = 0.4$

ULTIMATE THRUST MOMENT INTERACTION

Mu_3

Pu_3

262

GRAPH-93

$f = 1$
$z = 1$
$N = 1$
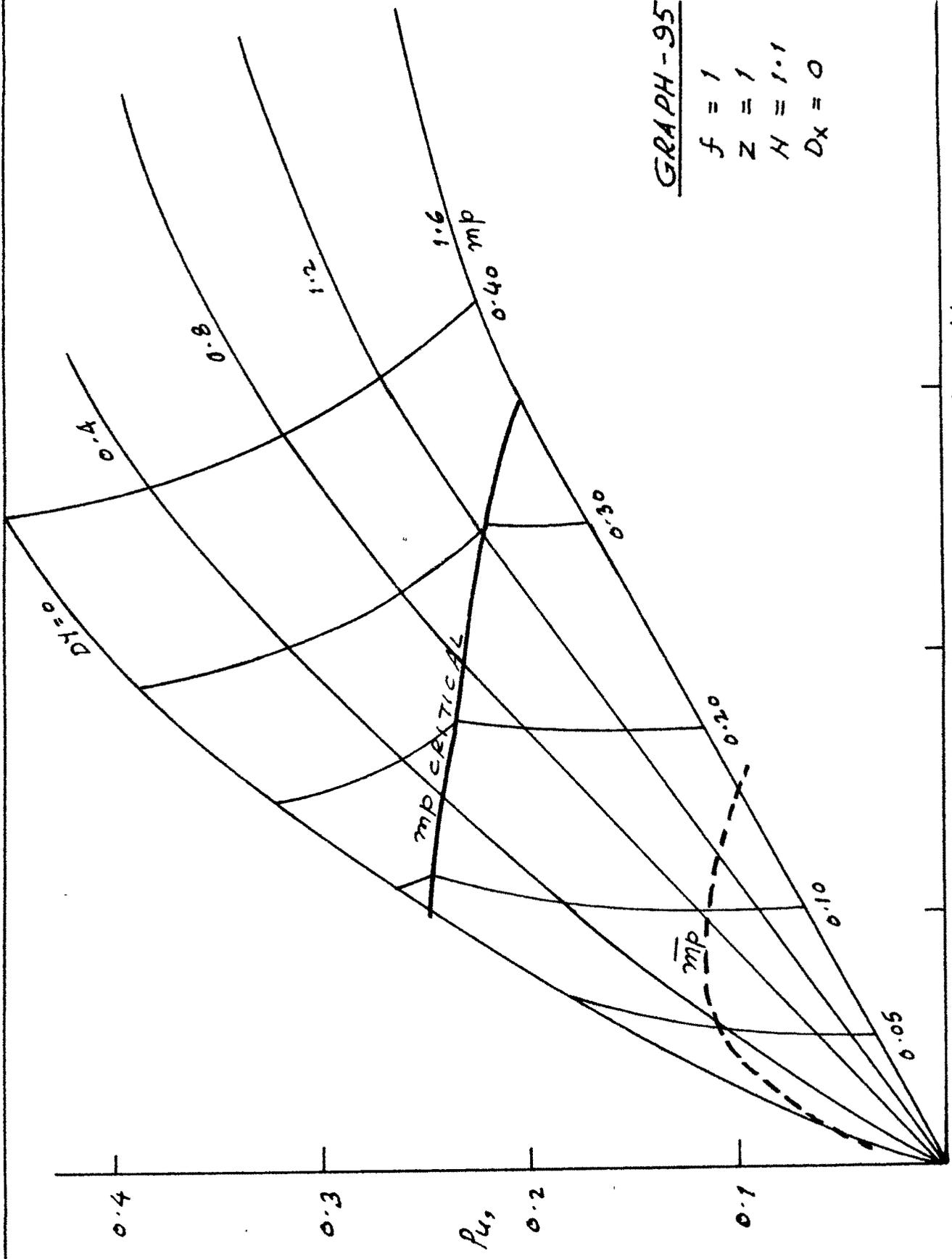$D_x = 0.8$

ULTIMATE THRUST MOMENT INTERACTION

Mu,

Pu,

263

GRAPH-94

$f = 1$
$z = 1$
$N = 1$
$D_x = 1.2$

ULTIMATE THRUST MOMENT INTERACTION

264

GRAPH - 95

$f = 1$
$z = 1$
$H = 1.1$
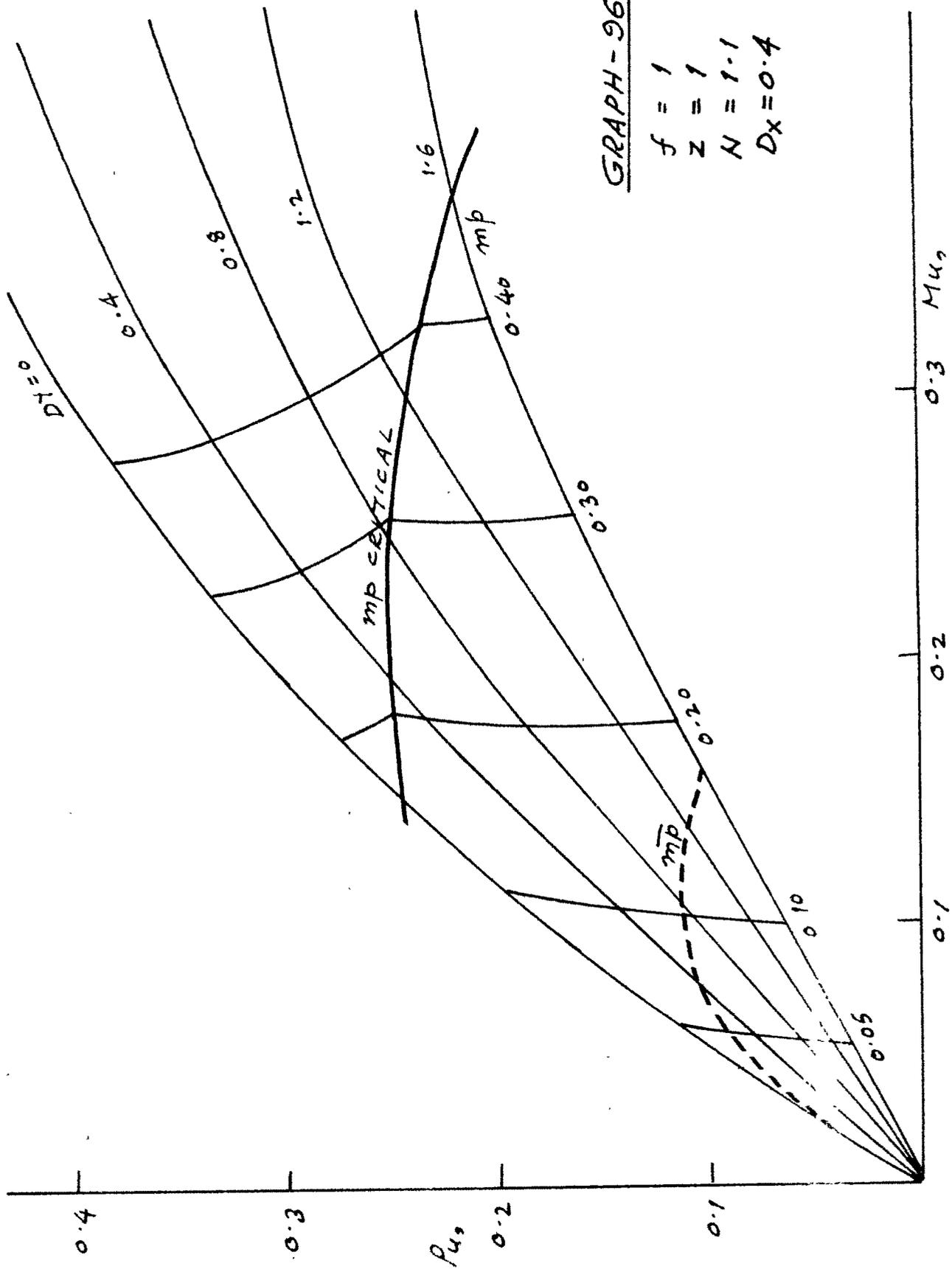$D_x = 0$

ULTIMATE THRUST MOMENT INTERACTION

M_u,
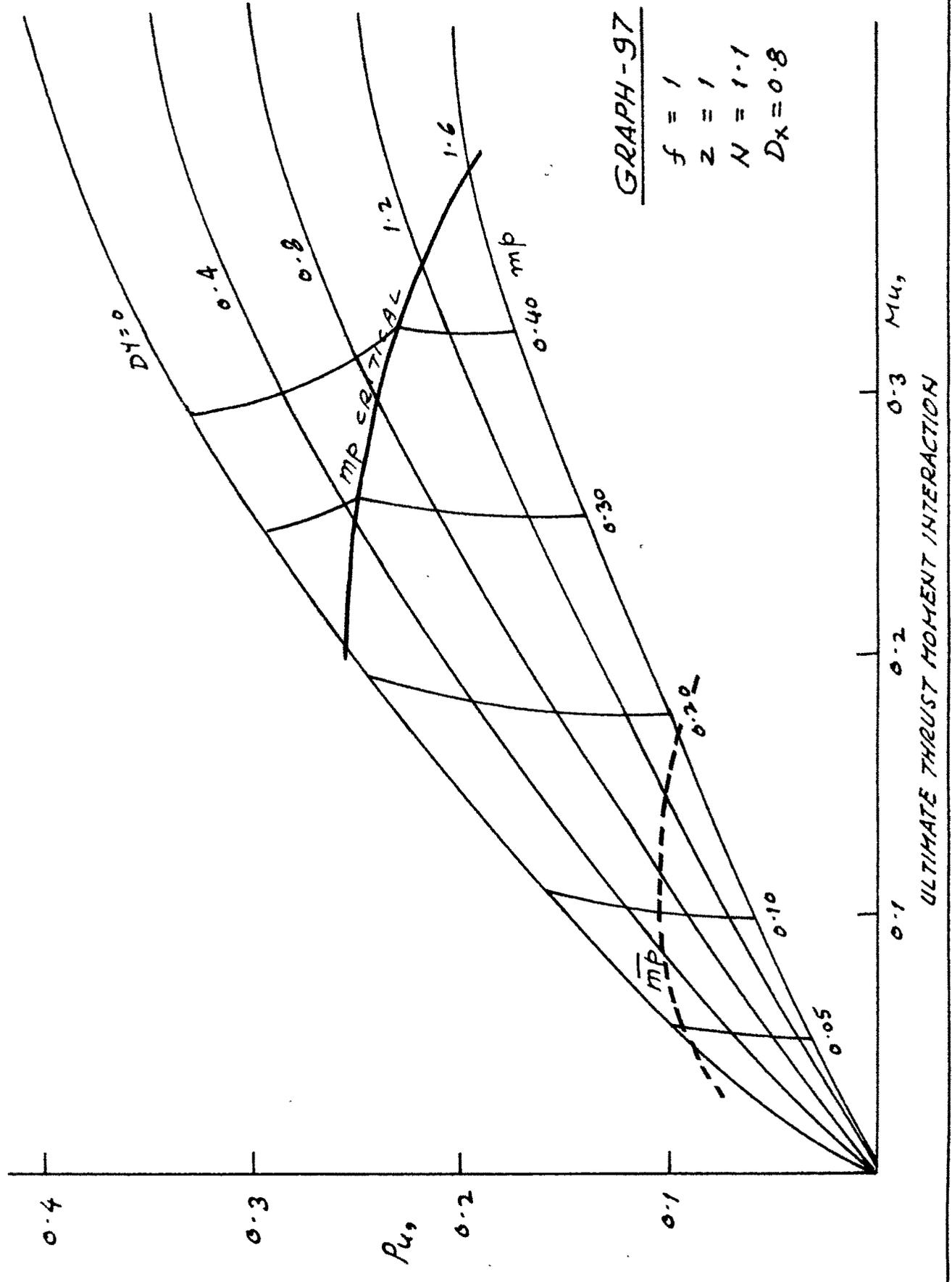
P_u,

$D_y = 0$

mp CRITICAL

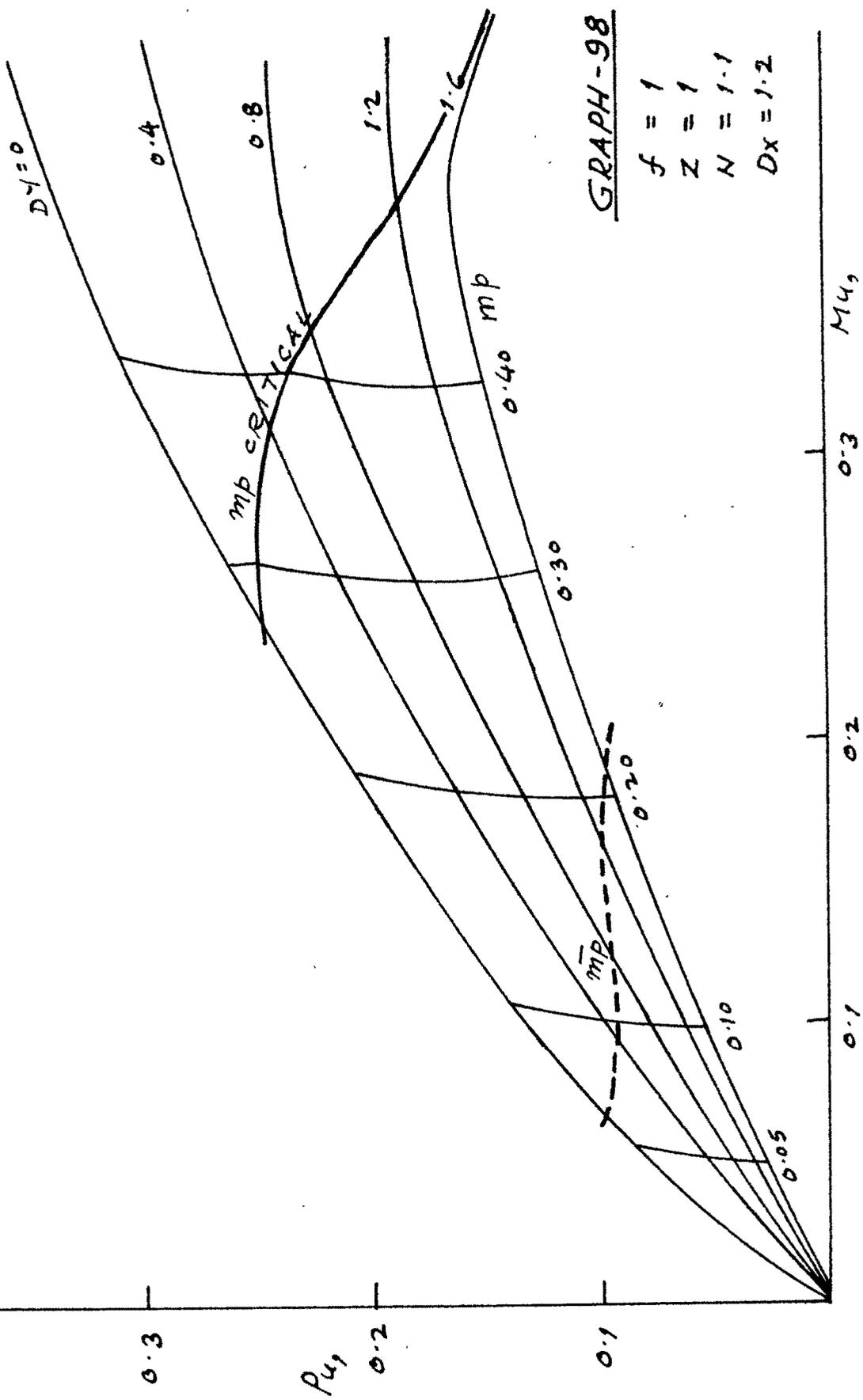$\overline{mp}$

$\overline{mp}$

265

GRAPH-96

$f = 1$
$z = 1$
$N = 1.1$
$D_x = 0.4$

ULTIMATE THRUST MOMENT INTERACTION

266

GRAPH-97

$f = 1$
$z = 1$
$N = 1.1$
$D_x = 0.8$

ULTIMATE THRUST MOMENT INTERACTION

Mu,

Pu,

267

GRAPH-98

$f = 1$
$z = 1$
$N = 1 \cdot 1$
$Dx = 1 \cdot 2$

ULTIMATE THRUST MOMENT INTERACTION