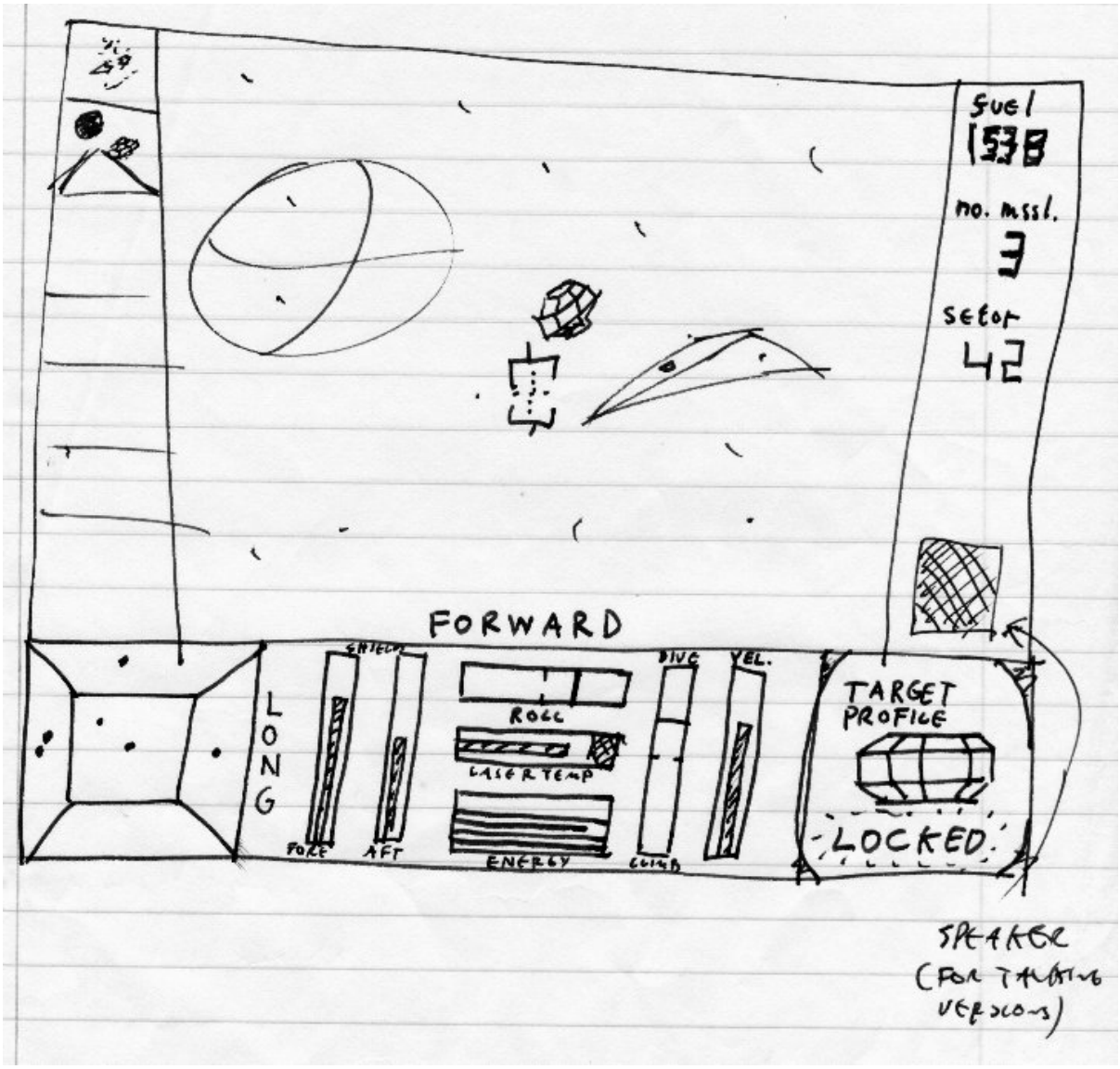
Elite Design Scans

Selected scans from Ian Bells "Elite" design documents



Initial concept.

Note:
* reconnaisance-captured image strip and status column intended to restrict width of updated area to 256 pixels.
* Early "open box" scanner.

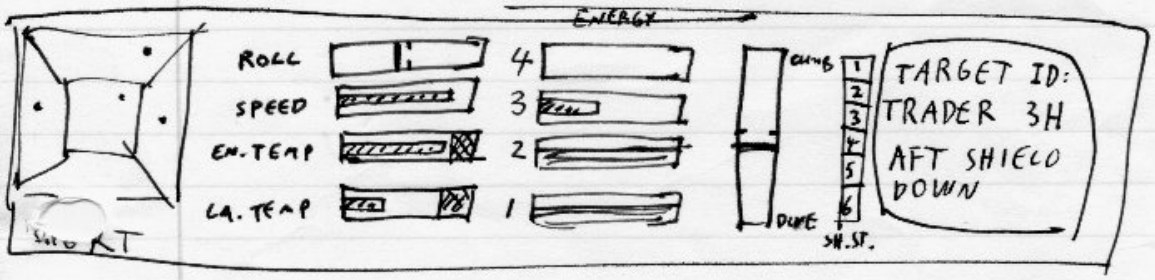
α (BANK RATE)	-30 - +34
β (DIVE/CLIMB RATE)	-15 - +16
S (SPEED)	0 - ?
ACCELERATION?	?
ENERGY	0 - 255 (?)
SHIELD ENERGY	0 - ?
LASER ENERGY	0 - ?

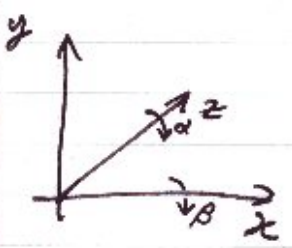
LASER TEMP.
ENGINE TEMP
MISSILE STATII

SCANNER 

TOGGLE SHORT/LONG

SHIELD STATUS





$$\alpha \text{ spin} \quad \begin{pmatrix} \cos\alpha & \sin\alpha & 0 \\ -\sin\alpha & \cos\alpha & 0 \\ 0 & 0 & 1 \end{pmatrix} \qquad \text{ROLL}$$

$$\beta \text{ spin} \quad \begin{pmatrix} 1 & 0 & 0 \\ 0 & \cos\beta & -\sin\beta \\ 0 & \sin\beta & \cos\beta \end{pmatrix} \qquad \text{PITCH}$$

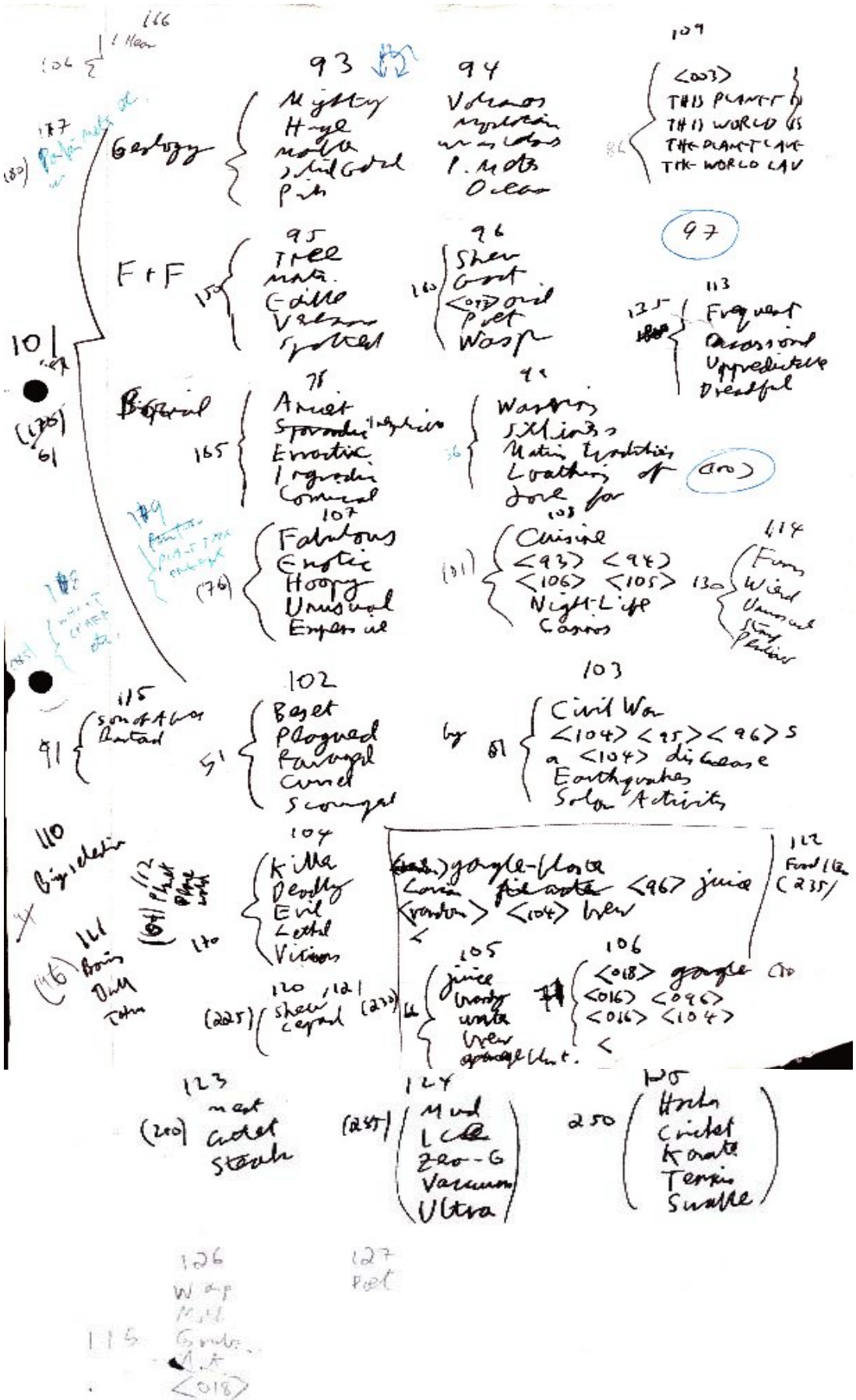
$$\begin{pmatrix} 1 & 0 & 0 \\ 0 & c\beta & -s\beta \\ 0 & s\beta & c\beta \end{pmatrix} \begin{pmatrix} c\alpha & s\alpha & 0 \\ -s\alpha & c\alpha & 0 \\ 0 & 0 & 1 \end{pmatrix}$$

$$= \begin{pmatrix} c\alpha & s\alpha & 0 \\ -s\alpha c\beta & c\alpha c\beta & -s\beta \\ -s\alpha s\beta & c\alpha s\beta & c\beta \end{pmatrix}$$

$$\approx \begin{pmatrix} 1 & \alpha & 0 \\ -\alpha & 1 & -\beta \\ -\alpha\beta & \beta & 1 \end{pmatrix}$$

$$\begin{pmatrix} x \\ y \\ z \end{pmatrix} \rightarrow \begin{matrix} x + \alpha y \\ y - \alpha x - \beta z \\ z + \beta(y - \alpha x) \end{matrix}$$

The classic Elite control model and the approximsation utilised.



The Goat Soup Recipe. Add art graduates and allow to stew.

LOGS

3/3/85

STORE $L_x = 32\log x$ $\quad 1 \le x \le 255$

$A_y = 2^{\frac{y}{32}-8}$ $\quad 0 \le y \le 255$

Multiplication: $\frac{x}{256}\times\frac{y}{256}$ $\quad 0 \le x, y \le 255$

$$\frac{x}{256}\times\frac{y}{256} = 2^{\log\frac{x}{256}+\log\frac{y}{256}} = 2^{\log x+\log y-16}$$

$$= 2^{\frac{8}{256}\left(\frac{256}{8}\log x+\frac{256}{8}\log y\right)-16} = 2^{\frac{1}{32}(L_x+L_y)-16}$$

$L_x+L_y<256 \Rightarrow \frac{x}{256}\times\frac{y}{256} < 2^{8-16} = 2^{-8} = \frac{1}{256}$ ∴ RESULT = 0

$L_x+L_y = 256+R \Rightarrow \frac{x}{256}\times\frac{y}{256} = 2^{8+\frac{1}{32}R-16} = A_R$

Division: $\frac{x}{y}$ $\quad 0 < x \le y \le 255$

$$\frac{x}{y} = 2^{\log x-\log y} = 2^{\frac{8}{256}\left(\frac{256}{8}\log x-\frac{256}{8}\log y\right)}$$

$$= 2^{\frac{1}{32}(L_x-L_y)} = 2^{\frac{1}{32}(256+L_x-L_y)-8}$$

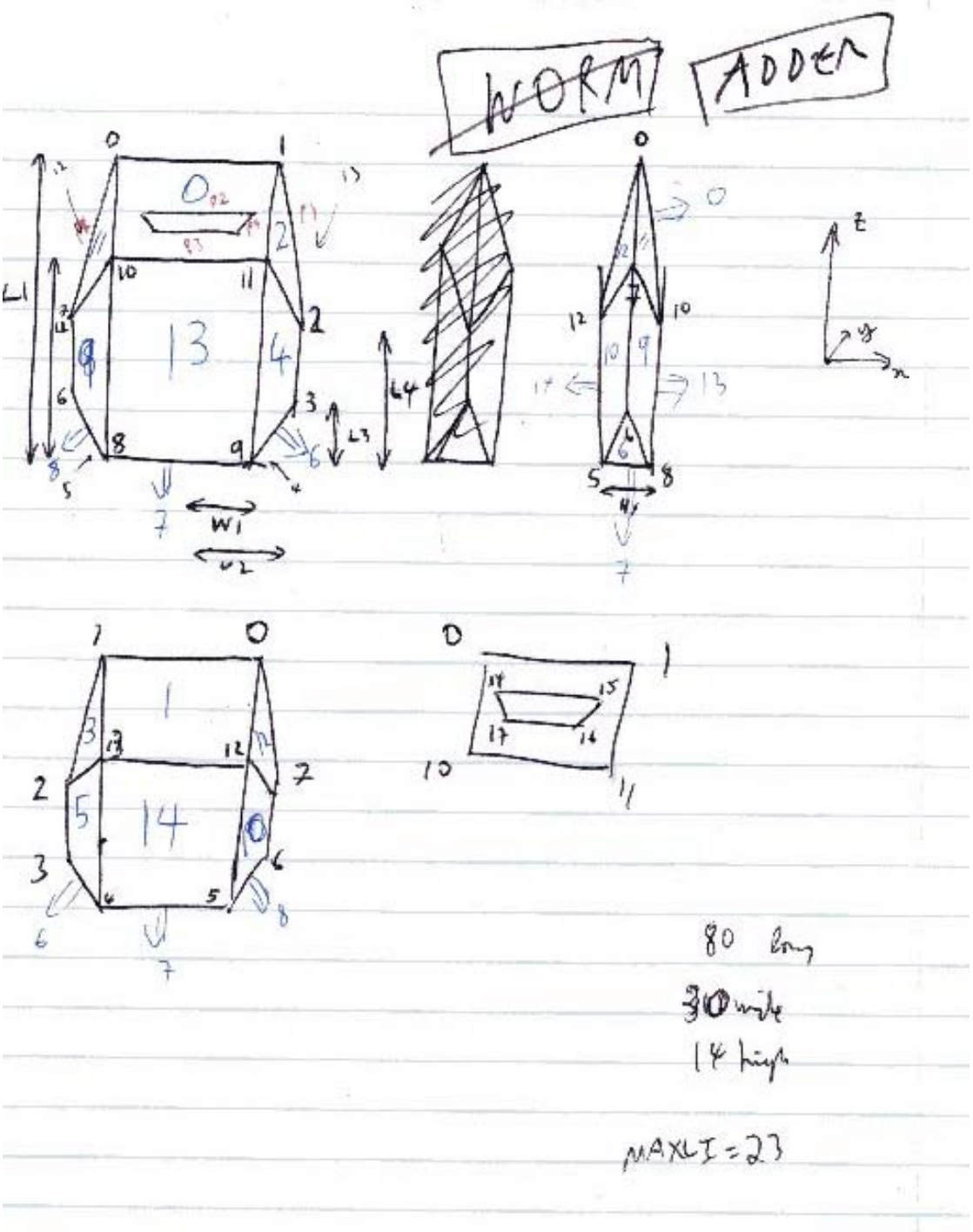
$$= A_{(256+L_x-L_y)}$$

[check if $L_x = L_y$ when $\frac{x}{y}$ = FF]

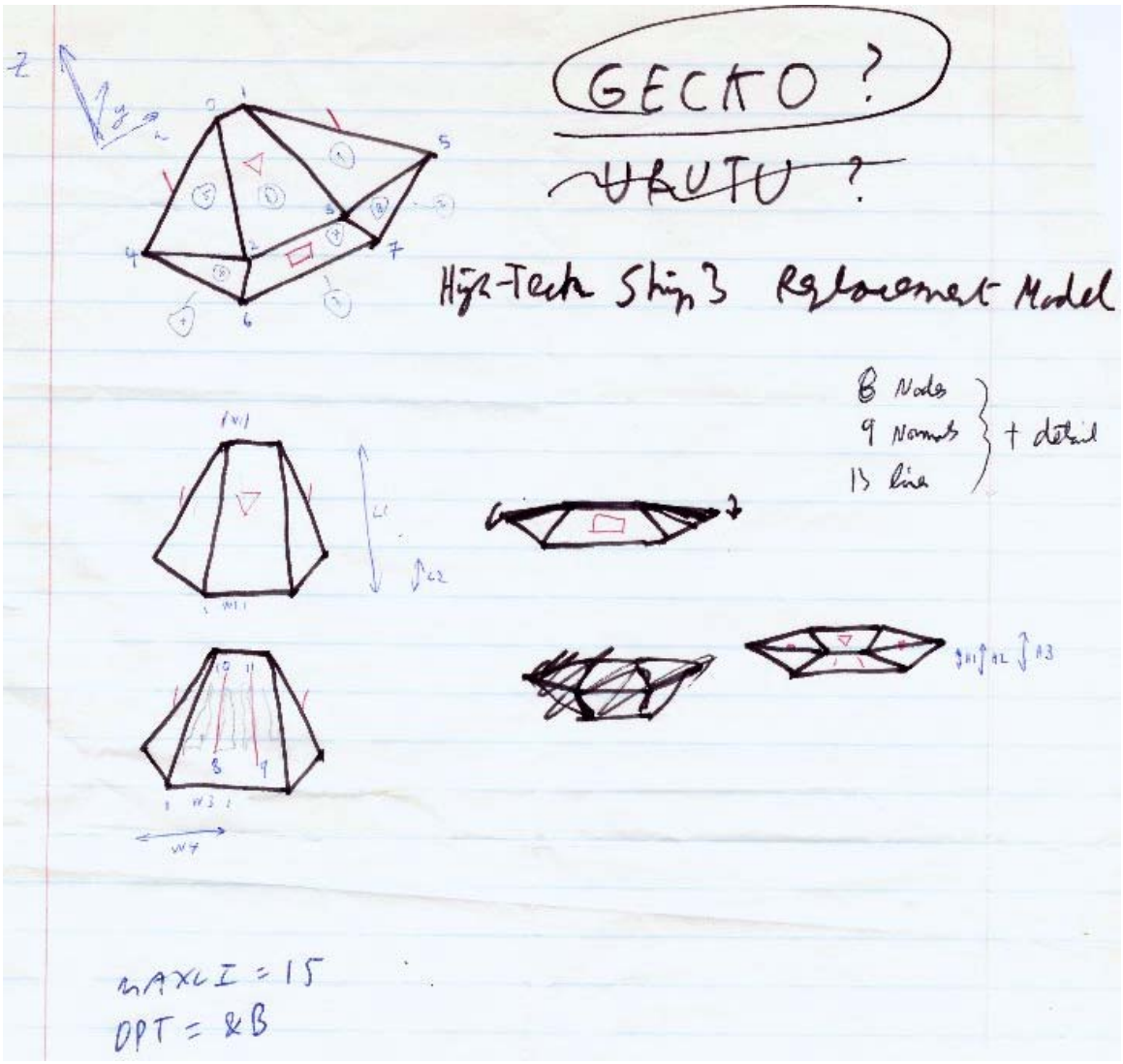
"$A_{y+\frac{x}{256}} \simeq A_y + \frac{x}{256}\underbrace{(A_{y+1}-A_y)}_{\in[\cdot6,\,1\cdot4]}$"

gives rel. error ~ 3.68×10^{-7} % i.e. ≤ 0.00000061..

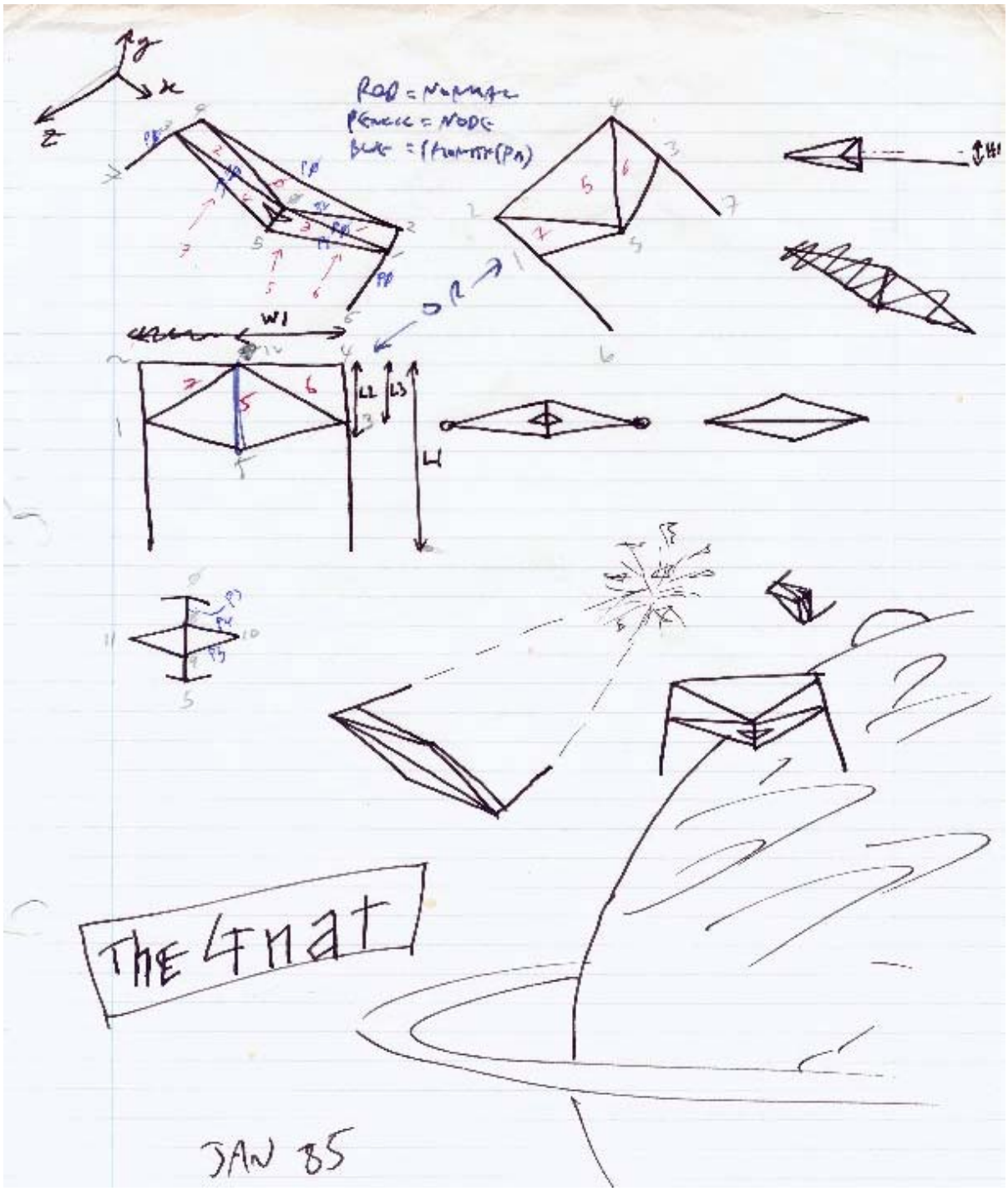
"Log multiply technology" used to speed up C64 Elite.



Design for Adder ship.



Design for Gecko ship.



Design for Gnat ship (later 6502 versions only).