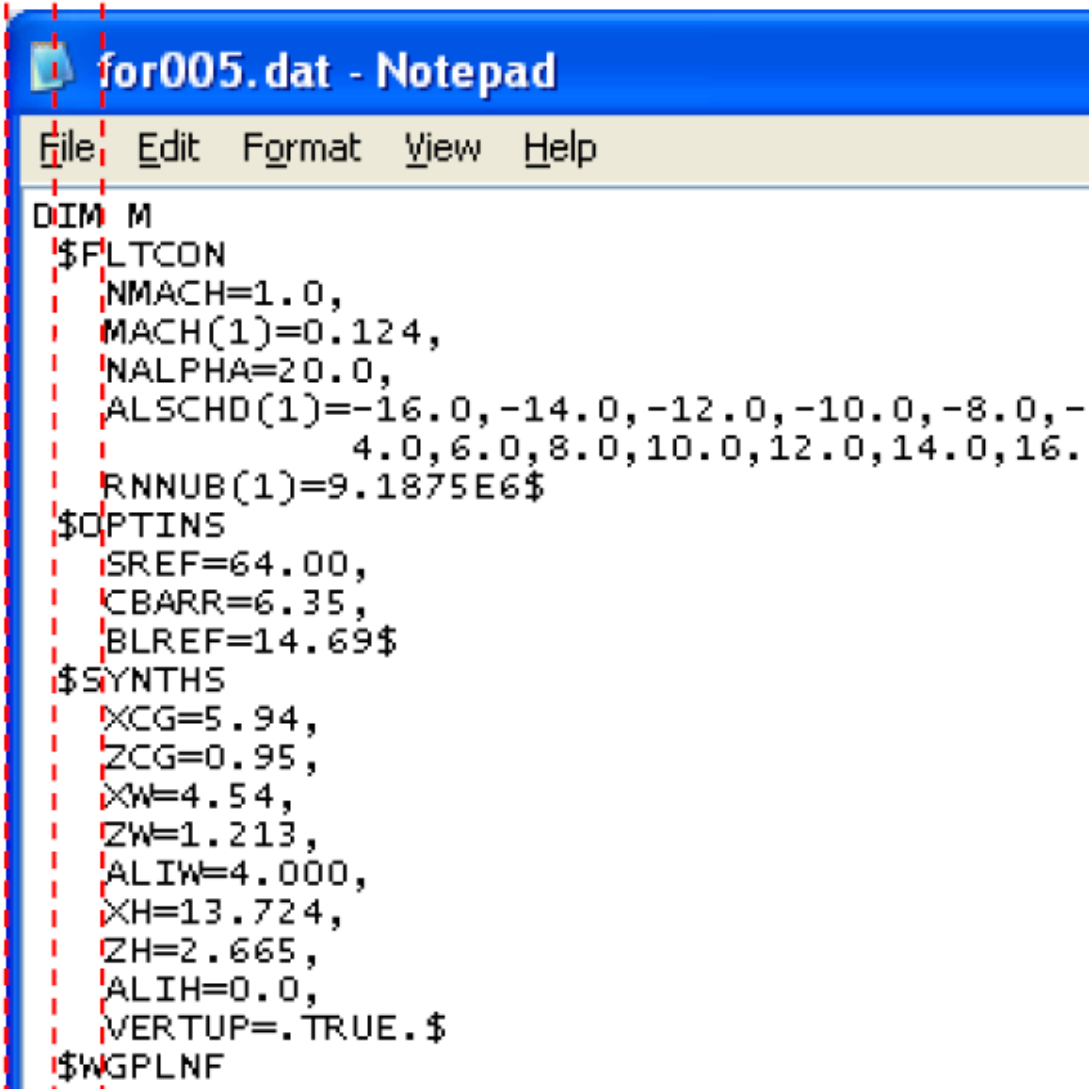
Aturan penulisan input FOR005.dat

- Komponen Utama Input: **Controller, Namelist dan Variables** ditulis dengan struktur sebagaimana terlihat →
- Setiap awal dan akhir namelist, selalu ada tanda ***'$'***
- Nilai tiap variable ditulis setelah tanda ***'='***,
- Tiap nilai ditulis dengan minimal satu angka dibelakang koma
- Tiap nilai diakhiri dengan ***',' (koma)***



Group I		Group II		Group III		Group IV
NameList Input						Control Input
Reference Data Definition		Basic Configuration Definition		Additional/Special Configuration Definition		Job Control Card
FLTCON	17	SYNTHS	15	PROPWR	14	NAMELIST
OPTINS	4	BODY	14	JETPWR	15	SAVE
		WGPLNF	20	GRNDEF	2	DIM
		HTPLNF	20	TVTPAN	8	NEXT CASE
		VTPLNF	20	SYMFLP	25	TRIM
		VFPLNF	20	ASYFLP	15	DAMP
		WGSCHR	31	LARWB	21	NACA
		HTSCHR	31	TRNJET	12	CASEID
		VTSCHR	31	HYPEFF	7	DUMP
		VFSCHR	31	CONTAB	20	DERIV
		EXPR--	32			PART
						BUILD
						PLOT

Aturan penulisan input FOR005.dat

- Tidak ada aturan khusus mengenai urutan tiap namelist dan variabel yang berkaitan.
- Akan tetapi akan lebih mudah menghafal dan mendeteksi salah dalam input apabila pola penulisannya sama terus
- Jadi di pelatihan ini akan diterapkan urutan Namelist sebagai berikut →
- DATCOM masih memiliki banyak lagi namelist dan control card yang bisa digunakan

CASEID → Judul Analisis

DIM → Dimensi yang digunakan

$FLTCON → ***Flight Condition***, kondisi terbang pesawat yang dianalisis

$WGPLNF → ***Wing Planform***, Data-data geometri Planform sayap

$WGSCHR → ***Wing Section*** Chord, Data-data Geometri Chord sayap

$HTPLNF → ***HTP Planform***, Data-data geometri Planform HTP

$HTSCHR → ***HTP Section*** Chord, Data-data Geometri Chord HTP

$VTPLNF → ***VTP Planform***, Data-data geometri Planform VTP

$VTSCHR → ***VTP Section*** Chord, Data-data Geometri Chord VTP

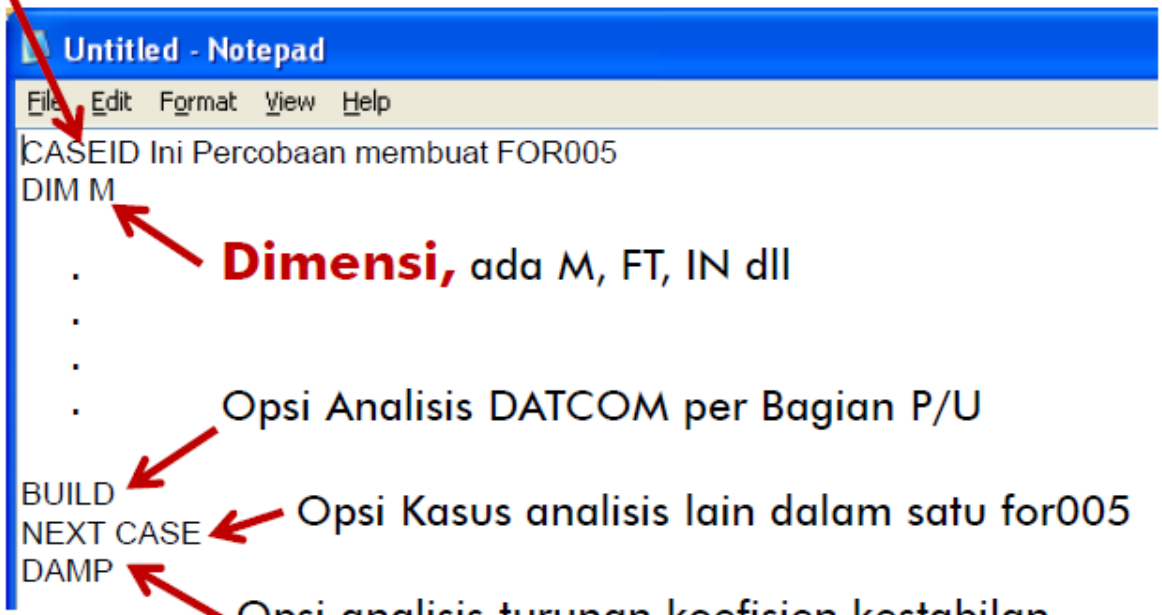
$BODY → Data-data geometri **Fuselage**

$SYNTHS → ***Synthesis***, posisi bagian-bagian pesawat dari garis referensi

Control Card

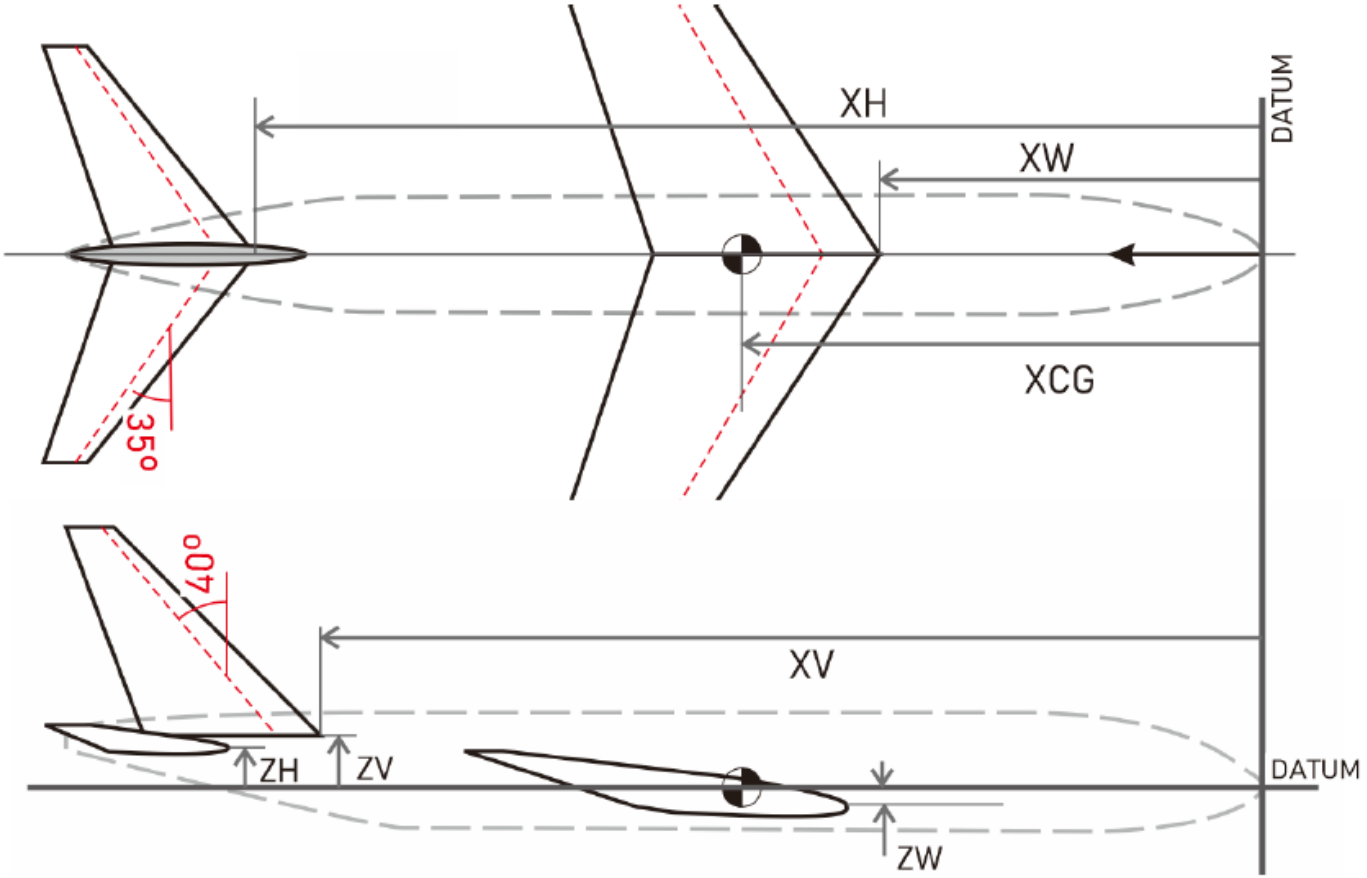
- Berfungsi untuk mengontrol jalannya analisis di DATCOM, termasuk diantaranya : Judul Analisis, Dimensi, Pilihan perhitungan dll
- Control Card harus dituliskan di kolom pertama file input

Judul, ditulis satu spasi setelah controlcard CASEID



[$SYNTHS Namelist]

```
$SYNTHS
 XCG=29.09,
 ZCG=0.0,
 XW=21.33,
 ZW=-2.42,
 ALIW=0.0,
 XH=57.21,
 ZH=2.18,
 ALIH=0.0,
 XV=53.33,
 ZV=2.91$
```

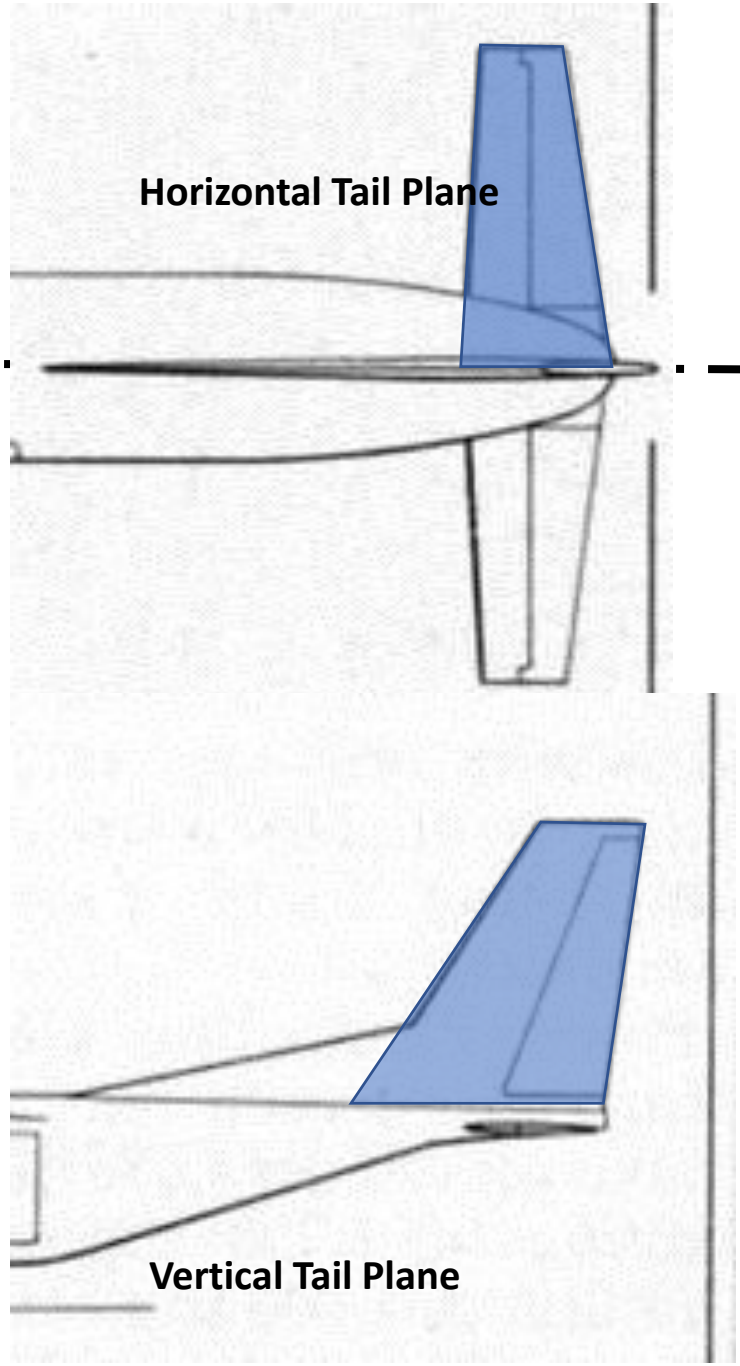


[$HTPLNF dan $VTPLNF Planform Namelist]

- Input mirip dengan wing planform namelist.
- Tidak ada dihedral dan twist pada VTP.
- IngatVTP hanya punya 1 bagian (not mirrored).

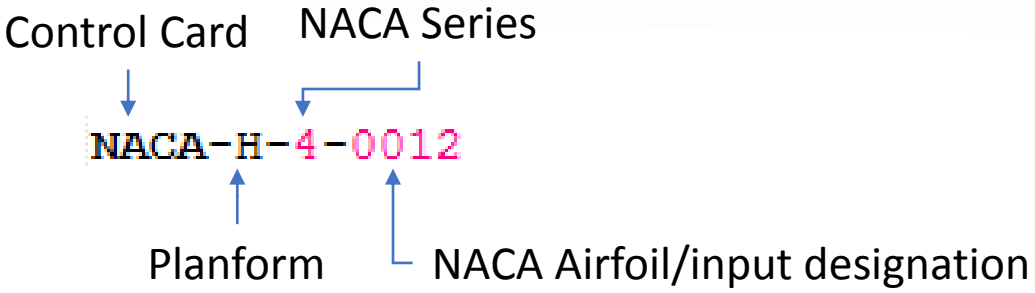
```
 $HTPLNF
  CHRDR=10.18,
  CHRDTP=2.91,
  SSPN=10.67,
  SSPNE=9.94,
  SAVSI=40.0,
  CHSTAT=0.25,
  TWISTA=0.0,
  DHDADI=7.0,
  TYPE=1.0$
NACA-H-4-0012
```

```
 $VTPLNF
  CHRDR=12.12,
  CHRDTP=4.36,
  SSPN=10.67,
  SSPNE=9.70,
  SAVSI=45.0,
  CHSTAT=0.25,
  TYPE=1.0$
NACA-V-4-0012
```



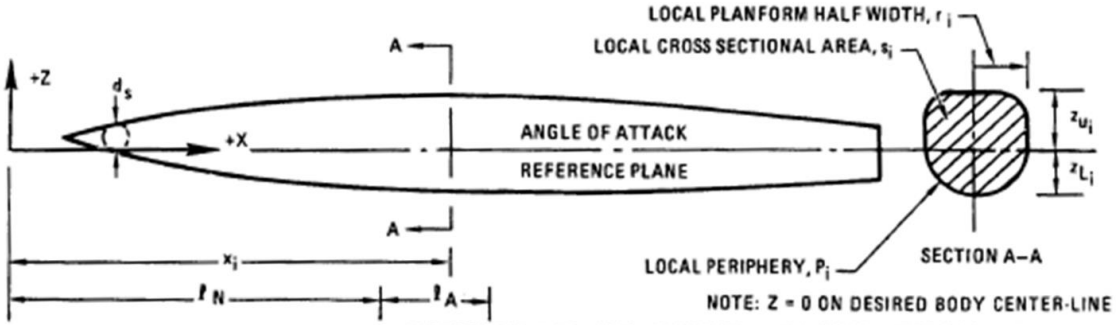
[NACA control card]

INPUT NACA DESIGNATION	NACA SERIES AIRFOIL	RESTRICTIONS
0012	4–DIGIT	NONE
0012.25	4–DIGIT	NONE (NOTE: THICKNESS CAN BE FRACTIONAL ONLY FOR 4–DIGIT SERIES)
23118	5–DIGIT	NONE
2406–32	4–DIGIT MODIFIED	POSITION OF MAXIMUM THICKNESS MUST BE AT 20, 30, 40, 50 OR 60% CHORD
43006–65	5–DIGIT MODIFIED	POSITION OF MAXIMUM THICKNESS MUST BE AT 20, 30, 40, 50 OR 60% CHORD
16–212	1–SERIES	X FOR MINIMUM PRESSURE MUST BE .6, .8 OR .9
64–005 64–205 A=0.6 63A005 652A215 A=0.6 65.2A215 A=0.6	6–SERIES	X FOR MINIMUM PRESSURE MUST BE .3, .4, .5 OR .6 (NOTE: THE PROGRAM DOES NOT DISTINGUISH BETWEEN A 64, 2–210 AND A 64_2–210. DIFFERENCE IN COORDINATES BETWEEN THE TWO DESIGNATIONS IS NEGLIGIBLE)



Source: DATCOM User Manual

[$BODY Namelist]



(1) ONLY REQUIRED FOR SUBSONIC ASYMMETRIC BODIES
(2) NOT REQUIRED IN SUBSONIC SPEED REGIME
(3) HYPERSONIC SPEED REGIME ONLY
(4) ONLY ONE VARIABLE IS REQUIRED
IF ONE VARIBLE IS INPUT THE OTHER TWO ARE COMPUTED FROM IT, ASSUMING A CIRCULAR CROSS-SECTION
IF TWO VARIABLES ARE INPUT, THE THIRD IS CALCULATED AS FOLLOWS:
S AND P INPUT, $R = \sqrt{S/\pi}$
P AND R INPUT, $S = \pi R^2$
S AND R INPUT, $P = 2\pi R$ WHERE $R = \sqrt{S/\pi}$ OR INPUT R, WHICHEVER IS THE LARGEST

ENGINEERING SYMBOL	VARIABLE NAME	ARRAY DIMENSION	DEFINITION	UNITS
	NX	–	NUMBER OF LONGITUDINAL BODY STATIONS AT WHICH DATA IS SPECIFIED, MAXIMUM OF 20.	–
x_i	X	20	LONGITUDINAL DISTANCE MEASURED FROM ARBITRARY LOCN	L
S_i	(4) S	20	CROSS SECTIONAL AREA AT STATION x_i	A
P_i	(4) P	20	PERIPHERY AT STATION x_i	L
r_i	(4) R**	20	PLANFORM HALF WIDTH AT STATION x_i	L
z_{u_i}	(1) ZU	20	z – Z-COORDINATE AT UPPER BODY SURFACE AT STATION x_i (POSITIVE WHEN ABOVE CENTERLINE)	L
z_{L_i}	(1) ZL	20	z – Z-COORDINATE AT LOWER BODY SURFACE AT STATION x_i (NEGATIVE WHEN BELOW CENTERLINE)	L
	(2) BNOSE	–	BNOSE = 1.0 CONICAL NOSE, BNOSE = 2.0 OGIVE NOSE	–
	(2) BTAIL	–	BTAIL = 1.0 CONICAL TAIL, BTAIL = 2.0 OGIVE TAIL OMIT FOR $\ell_{BT} = 0$	–
ℓ_N	(2) BLN	–	LENGTH OF BODY NOSE	L
ℓ_A	(2) BLA	–	LENGTH OF CYLINDRICAL AFTERBODY SEGMENT ℓ_A = 0.0 FOR NOSE ALONE OR NOSE-TAIL CONFIGURATIONS	L
d_s	(3) DS	–	NOSE BLUNTNESS DIAMETER, ZERO FOR SHARP NOSEBODIES	L
	ITYPE*	–	= 1. STRAIGHT WING, NO AREA RULE = 2. SWEPT WING, NO AREA RULE = 3. SWEPT WING, AREA RULE SET TO 2.0 IF NOT INPUT	–
	METHOD	–	= 1. USE EXISTING METHODS (DEFAULT) = 2. USE JORGENSEN METHOD	–

*USED IN CALCULATION OF TRANSONIC DRAG DIVERGENCE MACH NUMBER, DATCOM FIGURE 4.5.3.1–19
**USE EQUIVALENT RADIUS AT TRANSONIC AND SUPERSONIC MACH NUMBER, $R_{EQ} = \sqrt{S/\pi}$

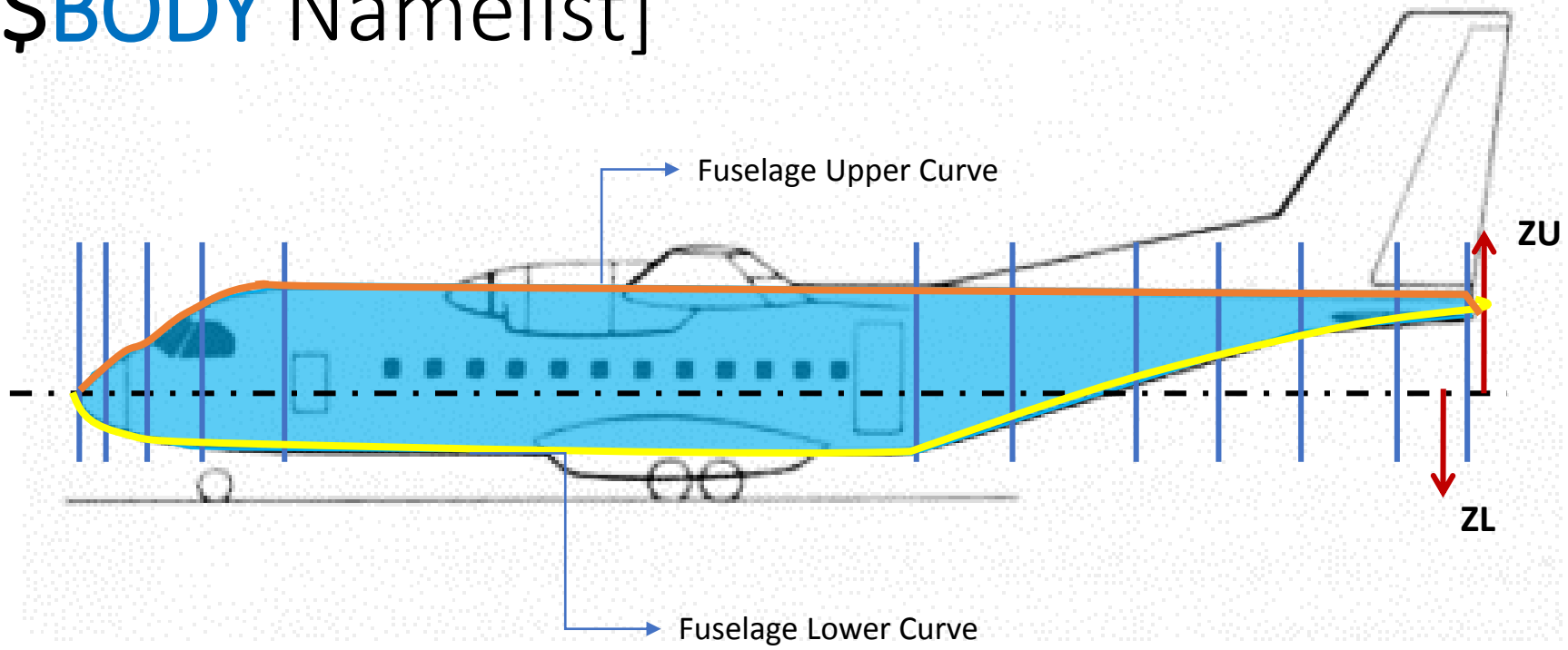
Untuk mempermudah perhitungan,

bisa **diasumsikan** section berbentuk

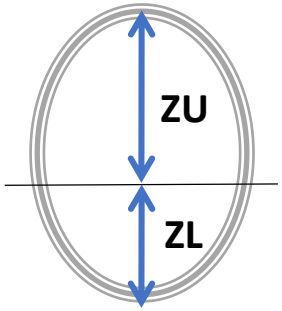
lingkaran dengan **r=(ZU-ZL)/2**

Source: DATCOM User Manual

[$BODY Namelist]



Estimasi Penampang



r=(ZU-ZL)/2

```
$BODY
 METHOD=2.0,
 NX=20.0,
 X=0.0,0.68,...,
 ZU=0.0,1.02,...,
 ZL=0.0,-0.92,...,
 S=0.0,2.95,...$
```

Metode untuk perhitungan fuselage

Banyak input

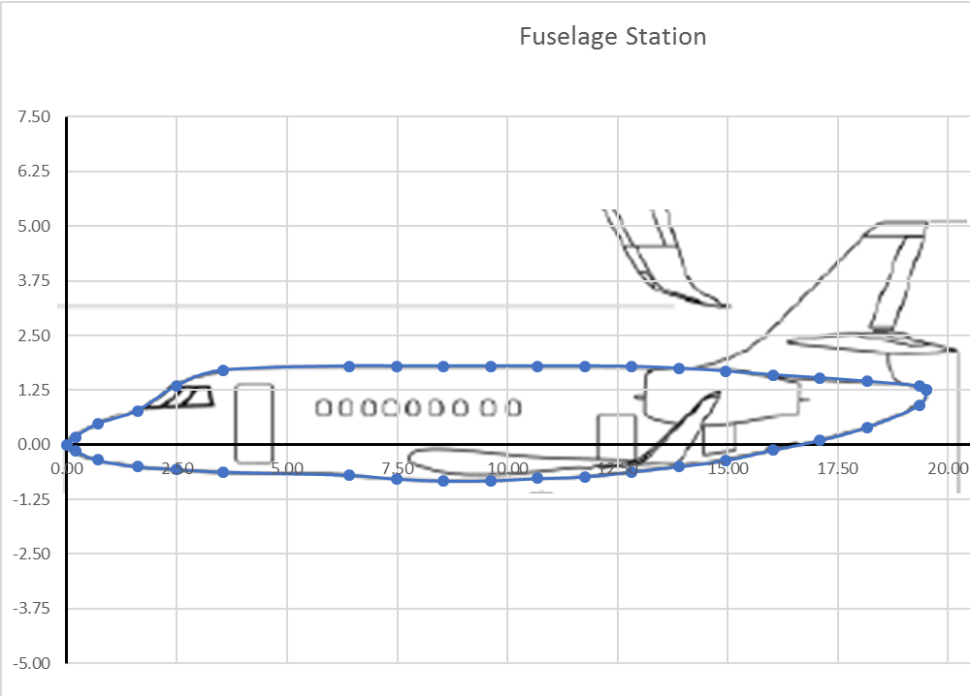
Posisi X Fuselage (fuselage station)

Posisi koordinat **kurva Atas** Fuselage

Posisi koordinat **kurva Bawah** Fuselage

Luas Ekuivalen (πr^2)

[$BODY Namelist]



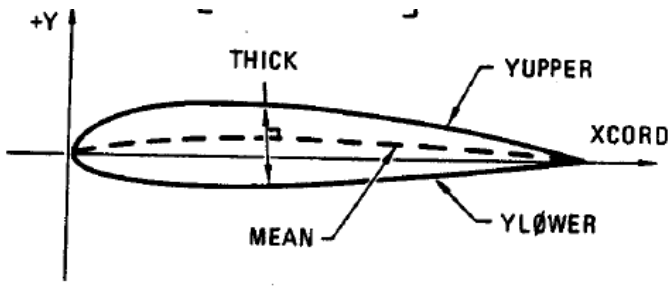
Station	X (measure	Zu (measur	ZL (measu	r	S_ekivalen
1	0.00	0.00	0.00	0.000	0.000
2	0.20	0.18	-0.13	0.155	0.075
3	0.70	0.48	-0.35	0.415	0.541
4	1.60	0.78	-0.50	0.640	1.287
5	2.50	1.35	-0.56	0.955	2.865
6	3.54	1.70	-0.62	1.160	4.227
7	6.41	1.80	-0.69	1.247	4.885
8	7.48	1.80	-0.78	1.290	5.228
9	8.55	1.80	-0.82	1.312	5.408
10	9.62	1.80	-0.82	1.311	5.395
11	10.68	1.80	-0.77	1.285	5.187
12	11.75	1.80	-0.73	1.265	5.027
13	12.82	1.79	-0.62	1.205	4.562
14	13.89	1.75	-0.50	1.125	3.976
15	14.96	1.68	-0.36	1.020	3.269
16	16.03	1.60	-0.12	0.860	2.324
17	17.09	1.53	0.10	0.715	1.606
18	18.16	1.45	0.40	0.525	0.866
19	19.35	1.34	0.90	0.220	0.152
20	19.52	1.25	1.25	0.000	0.000

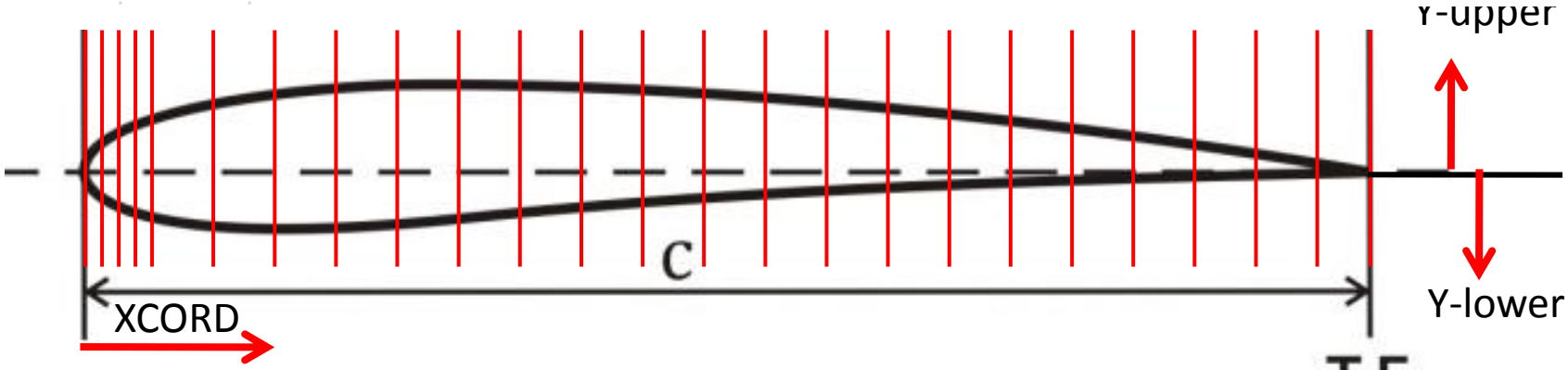
[$WGSCHR Namelist]

```
$WGSCHR TYPEIN= 1.0,
        NPTS= 19.0,
        XCORD= 0.000, ...,
        YUPPER= 0.000, ...,
        YLOWER=0.000,...$
```

NACA-W-4-2412

Maksimum input data input adalah 50!





Airfoil is defined as a set of upper and lower y-axis coordinate for every normalized x-axis coordinate.