

# Dassault Mirage 2000-5 Aerodynamic data built from vspaero; CG (8.6, 0, 0.617)M, 2018-06-17 22:13

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AeroDetail=Full, Gear, Flaps, WakeIterations=2

## Model summary

Dependent variable	Independent variables	Axis	Description
CFXB	alpha	DRAG	BASIC DRAG
CFXDED1L	alpha,beta,DED1L	DRAG	DRAG DUE TO ELEVON 1L
CFXDED1R	alpha,beta,DED1R	DRAG	DRAG DUE TO ELEVON 1R
CFXDED2L	alpha,beta,DED2L	DRAG	DRAG DUE TO ELEVON 2L
CFXDED2R	alpha,beta,DED2R	DRAG	DRAG DUE TO ELEVON 2R
CFXDSD1L	alpha	DRAG	DRAG DUE TO LE SLAT 1L
CFXDSD1R	alpha	DRAG	DRAG DUE TO LE SLAT 1R
CFXDSD2L	alpha	DRAG	DRAG DUE TO LE SLAT 2L
CFXDSD2R	alpha	DRAG	DRAG DUE TO LE SLAT 2R
CFXDSBL	alpha	DRAG	DRAG DUE TO LOWER SPEEDBRAKE DEFLECTION
CFXmn	mach,alpha	DRAG	DRAG DUE TO MACH
CFXDSBU	alpha	DRAG	DRAG DUE TO UPPER SPEEDBRAKE DEFLECTION
CFXGEAR	alpha	DRAG	DRAG INCREMENT DUE TO GEAR
CFZB	alpha	LIFT	BASIC LIFT
CFZDED1L	alpha,beta,DED1L	LIFT	LIFT DUE TO ELEVON 1L
CFZDED1R	alpha,beta,DED1R	LIFT	LIFT DUE TO ELEVON 1R
CFZDSD1L	alpha	LIFT	LIFT DUE TO LE SLAT 1L
CFZDSD1R	alpha	LIFT	LIFT DUE TO LE SLAT 1R
CFZDE2L	alpha	LIFT	LIFT DUE TO LE SLAT 2L
CFZDE2R	alpha	LIFT	LIFT DUE TO LE SLAT 2R
CFZDEL	alpha	LIFT	LIFT DUE TO LOWER SPEEDBRAKE DEFLECTION
CFZmn	mach,alpha	LIFT	LIFT DUE TO MACH
CFZDSBU	alpha	LIFT	LIFT DUE TO UPPER SPEEDBRAKE DEFLECTION
CFZGEAR	alpha	LIFT	LIFT INCREMENT DUE TO GEAR
CMM1	alpha	PITCH	BASIC PITCHING MOMENT
CMMQ	alpha	PITCH	PITCH DAMPING DERIVATIVE
CMMmnw	mach,alpha	PITCH	PITCH DUE TO MACH
CMMDED1L	alpha,beta,DED1L	PITCH	PITCH MOMENT DUE TO ELEVON 1L
CMMDED1R	alpha,beta,DED1R	PITCH	PITCH MOMENT DUE TO ELEVON 1R
CMMDED2L	alpha,beta,DED2L	PITCH	PITCH MOMENT DUE TO ELEVON 2L

CMMDED2R	alpha,beta,DED2R	PITCH	PITCH MOMENT DUE TO ELEVON 2R
CMMDS1L	alpha	PITCH	PITCH MOMENT DUE TO LE SLAT 1L
CMMDS1R	alpha	PITCH	PITCH MOMENT DUE TO LE SLAT 1R
CMMDS2L	alpha	PITCH	PITCH MOMENT DUE TO LE SLAT 2L
CMMDS2R	alpha	PITCH	PITCH MOMENT DUE TO LE SLAT 2R
CMMDSBL	alpha	PITCH	PITCH MOMENT DUE TO LOWER SPEEDBRAKE DEFLECTION
CMMDSBU	alpha	PITCH	PITCH MOMENT DUE TO UPPER SPEEDBRAKE DEFLECTION
CMMGEAR	alpha	PITCH	PITCHING MOMENT INCREMENT DUE TO GEAR
CML1	alpha,beta	ROLL	BASIC ROLLING MOMENT
CMLP	alpha	ROLL	ROLL DAMPING DERIVATIVE
CMLmnw	mach,alpha	ROLL	ROLL DUE TO MACH
CMLDED1L	alpha,beta,DED1L	ROLL	ROLLING MOMENT DUE TO ELEVON 1L DEFLECTION
CMLDED1R	alpha,beta,DED1R	ROLL	ROLLING MOMENT DUE TO ELEVON 1R DEFLECTION
CMLDED2L	alpha,beta,DED2L	ROLL	ROLLING MOMENT DUE TO ELEVON 2L DEFLECTION
CMLDED2R	alpha,beta,DED2R	ROLL	ROLLING MOMENT DUE TO ELEVON 2R DEFLECTION
CMLDSD1L	alpha	ROLL	ROLLING MOMENT DUE TO LE SLAT 1L DEFLECTION
CMLDSD1R	alpha	ROLL	ROLLING MOMENT DUE TO LE SLAT 1R DEFLECTION
CMLDSD2L	alpha	ROLL	ROLLING MOMENT DUE TO LE SLAT 2L DEFLECTION
CMLDSD2R	alpha	ROLL	ROLLING MOMENT DUE TO LE SLAT 2R DEFLECTION
CMLDSBL	alpha	ROLL	ROLLING MOMENT DUE TO LOWER SPEEDBRAKE DEFLECTION
CMLDRD	alpha,beta,DRD	ROLL	ROLLING MOMENT DUE TO RUDDER DEFLECTION
CMLDSBU	alpha	ROLL	ROLLING MOMENT DUE TO UPPER SPEEDBRAKE DEFLECTION
CMLR	alpha	ROLL	ROLLING MOMENT DUE TO YAW RATE
CMLGEAR	alpha	ROLL	ROLLING MOMENT INCREMENT DUE TO GEAR
CFYB	alpha,beta	SIDE	BASIC SIDE FORCE
CFYDED1L	alpha,beta,DED1L	SIDE	SIDE FORCE DUE TO ELEVON 1L DEFLECTION
CFYDED1R	alpha,beta,DED1R	SIDE	SIDE FORCE DUE TO ELEVON 1R DEFLECTION
CFYDED2L	alpha,beta,DED2L	SIDE	SIDE FORCE DUE TO ELEVON 2L DEFLECTION
CFYDED2R	alpha,beta,DED2R	SIDE	SIDE FORCE DUE TO ELEVON 2R DEFLECTION
CFYDSD1L	alpha	SIDE	SIDE FORCE DUE TO LE SLAT 1L DEFLECTION
CFYDSD1R	alpha	SIDE	SIDE FORCE DUE TO LE SLAT 1R DEFLECTION
CFYDSD2L	alpha	SIDE	SIDE FORCE DUE TO LE SLAT 2L DEFLECTION
CFYDSD2R	alpha	SIDE	SIDE FORCE DUE TO LE SLAT 2R DEFLECTION
CFYDSBL	alpha	SIDE	SIDE FORCE DUE TO LOWER SPEEDBRAKE DEFLECTION
CFYmn	mach,alpha	SIDE	SIDE FORCE DUE TO MACH
CFYP	alpha	SIDE	SIDE FORCE DUE TO ROLL RATE
CFYDRD	alpha,beta,DRD	SIDE	SIDE FORCE DUE TO RUDDER DEFLECTION
CFYDSBU	alpha	SIDE	SIDE FORCE DUE TO UPPER SPEEDBRAKE DEFLECTION

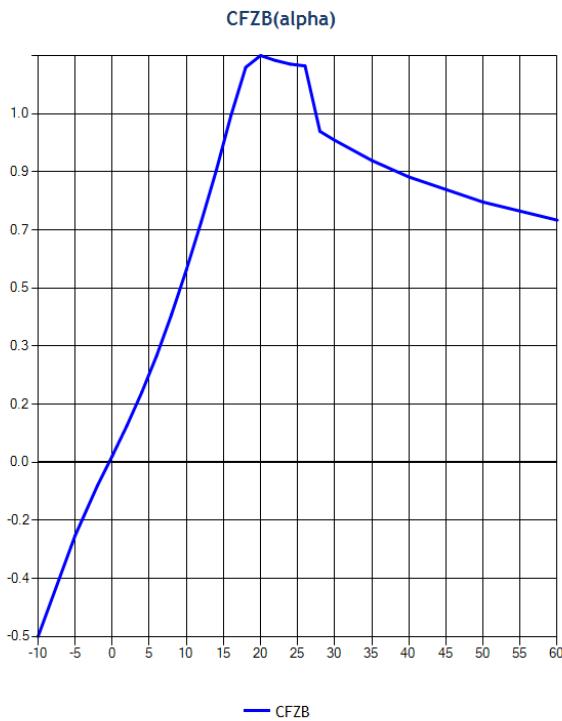
CFYR	alpha	SIDE	SIDE FORCE DUE TO YAW RATE
CFYGEAR	alpha	SIDE	SIDE FORCE INCREMENT DUE TO GEAR
CMN1	alpha,beta	YAW	BASIC YAWING MOMENT
CMNR	alpha	YAW	YAW DAMPING DERIVATIVE
CMNmnw	mach,alpha	YAW	YAW DUE TO MACH
CMNDED1L	alpha,beta,DED1L	YAW	YAW MOMENT DUE TO ELEVON 1L
CMNDED1R	alpha,beta,DED1R	YAW	YAW MOMENT DUE TO ELEVON 1R
CMNDED2L	alpha,beta,DED2L	YAW	YAW MOMENT DUE TO ELEVON 2L
CMNDED2R	alpha,beta,DED2R	YAW	YAW MOMENT DUE TO ELEVON 2R
CMNDSD1L	alpha	YAW	YAW MOMENT DUE TO LE SLAT 1L
CMNDSD1R	alpha	YAW	YAW MOMENT DUE TO LE SLAT 1R
CMNDSD2L	alpha	YAW	YAW MOMENT DUE TO LE SLAT 2L
CMNDSD2R	alpha	YAW	YAW MOMENT DUE TO LE SLAT 2R
CMNDSBL	alpha	YAW	YAW MOMENT DUE TO LOWER SPEEDBRAKE DEFLECTION
CMNDSBU	alpha	YAW	YAW MOMENT DUE TO UPPER SPEEDBRAKE DEFLECTION
CMNP	alpha	YAW	YAWING MOMENT DUE TO ROLL RATE
CMNDRDr	alpha,beta,DRD	YAW	YAWING MOMENT DUE TO RUDDER DEFLECTION
CMNGEAR	alpha	YAW	YAWING MOMENT INCREMENT DUE TO GEAR

## Coefficient Buildup

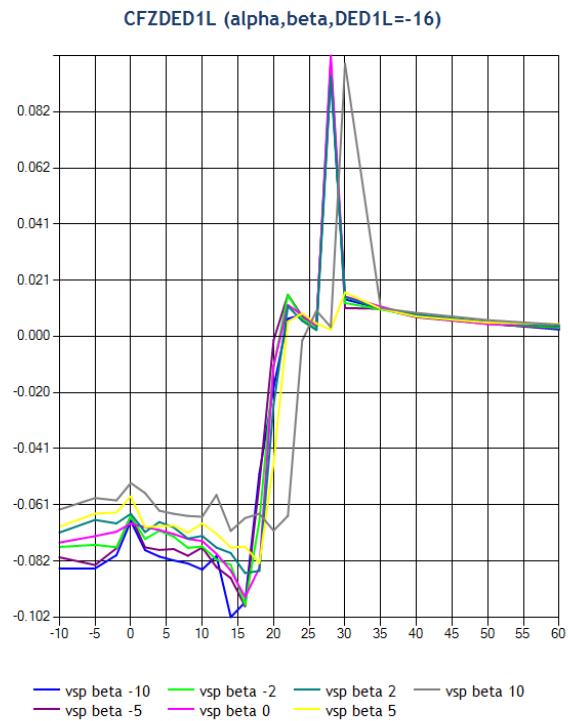
Axis	Buildup
DRAG	CFXDSD1L*DSD1L + CFXDSD1R*DSD1R + CFXDSD2L*DSD2L + CFXDSD2R*DSD2R + CFXDSBU*DSBU + CFXDSBL*DSBL + CFXGEAR*gear + CFXB + CFXDED1L + CFXDED1R + CFXDED2L + CFXDED2R + CFXmn
SIDE	CFYDSD1L*DSD1L + CFYDSD1R*DSD1R + CFYDSD2L*DSD2L + CFYDSD2R*DSD2R + CFYDSBU*DSBU + CFYDSBL*DSBL + CFYGEAR*gear + CFYB + CFYDED1L + CFYDED1R + CFYDED2L + CFYDED2R + CFYDRD + CFYP*PB + CFYR*RB + CFYmn
LIFT	CFZDSD1L*DSD1L + CFZDSD1R*DSD1R + CFZDE2L*DSD2L + CFZDE2R*DSD2R + CFZDSBU*DSBU + CFZDEL*DSBL + CFZGEAR*gear + CFZB + CFZDED1L + CFZDED1R + CFZDE2L + CFZDE2R + CFZmn
ROLL	CMLDSD1L*DSD1L + CMLDSD1R*DSD1R + CMLDSD2L*DSD2L + CMLDSD2R*DSD2R + CMLDSBU*DSBU + CMLDSBL*DSBL + CMLGEAR*gear + CML1 + CMLDED1L + CMLDED1R + CMLDED2L + CMLDED2R + CMLRD + CMLP*PB + CMLR*RB + CMLmnw + (DLNB*BETA)
PITCH	CMMDSDF1L*DSD1L + CMMDSDF1R*DSD1R + CMMDSDF2L*DSD2L + CMMDSDF2R*DSD2R + CMMDSBU*DSBU + CMMDSBL*DSBL + CMMGEAR*gear + CMM1 + CMMQ*QB + CMMDED1L + CMMDED1R + CMMDED2L + CMMDED2R + CMMmnw
YAW	CMNDSDF1L*DSD1L + CMNDSDF1R*DSD1R + CMNDSDF2L*DSD2L + CMNDSDF2R*DSD2R + CMNDSBU*DSBU + CMNDSBL*DSBL + CMNGEAR*gear + CMN1 + CMNDED1L + CMNDED1R + CMNDED2L + CMNDED2R + CMNDRDr + CMNP*PB + CMNR*RB + CMNmnw + (DCNB*BETA)

## LIFT

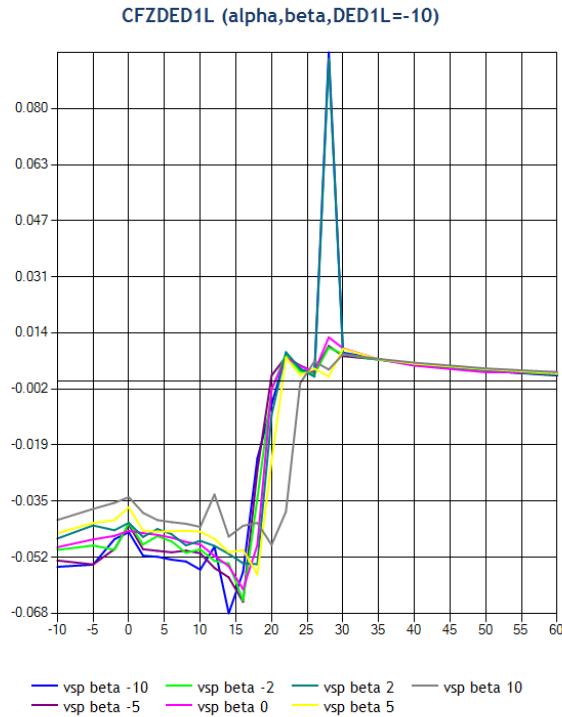
### BASIC LIFT



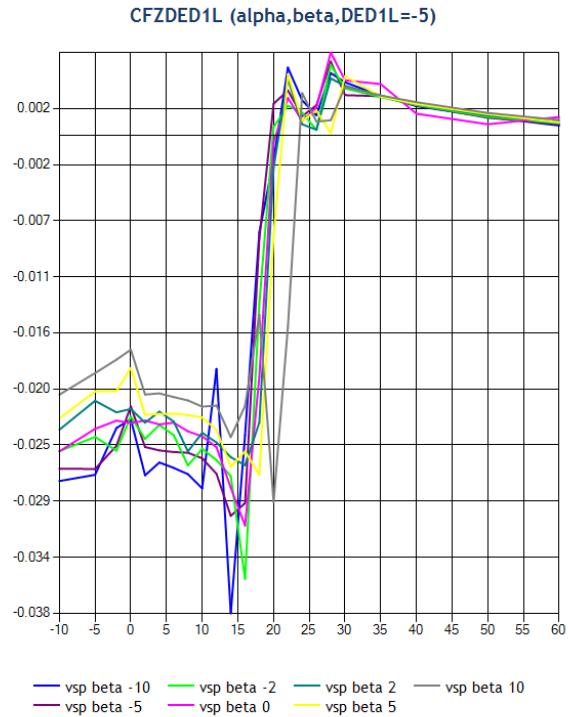
### LIFT DUE TO ELEVON 1L



### LIFT DUE TO ELEVON 1L

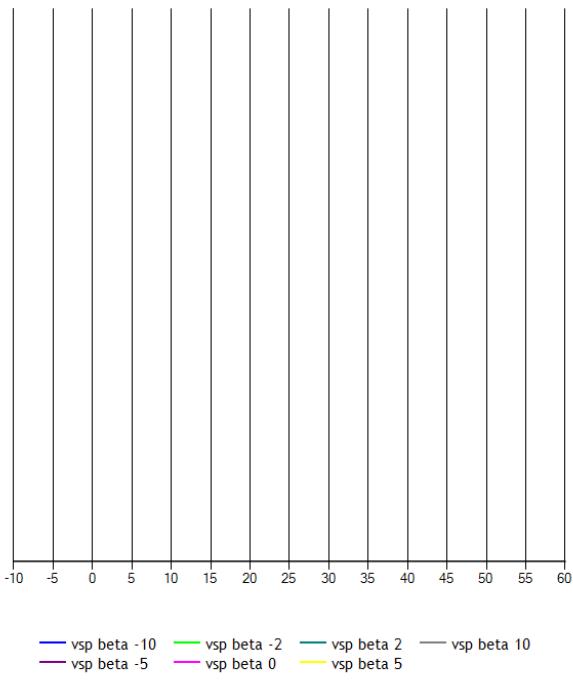


### LIFT DUE TO ELEVON 1L



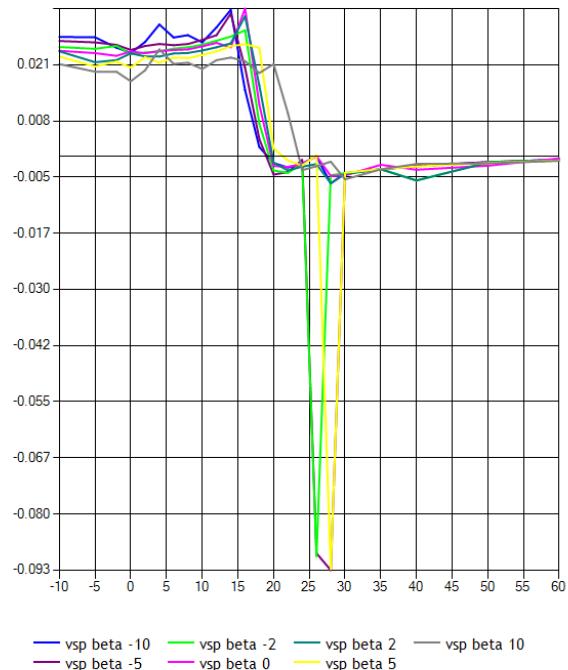
LIFT DUE TO ELEVON 1L

CFZDED1L (alpha,beta,DED1L=0)



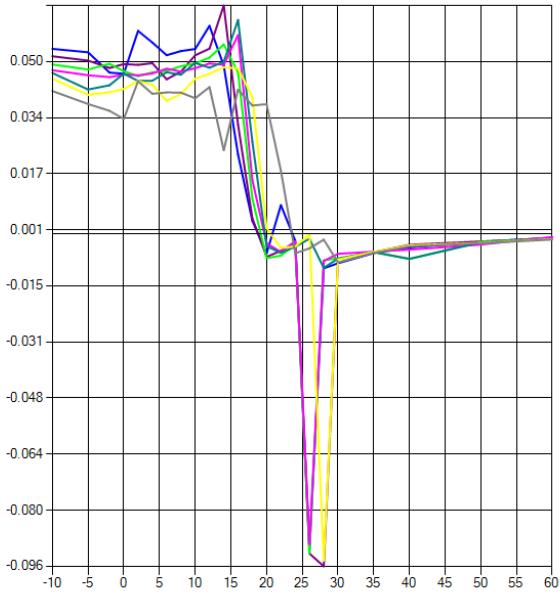
LIFT DUE TO ELEVON 1L

CFZDED1L (alpha,beta,DED1L=5)



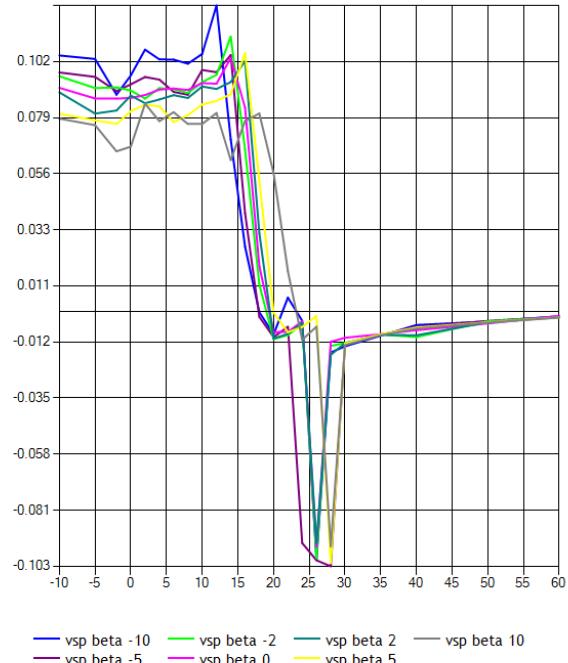
LIFT DUE TO ELEVON 1L

CFZDED1L (alpha,beta,DED1L=10)

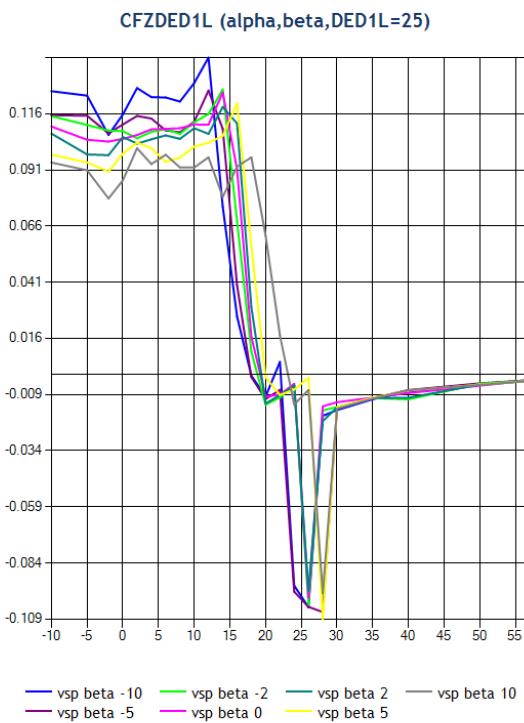


LIFT DUE TO ELEVON 1L

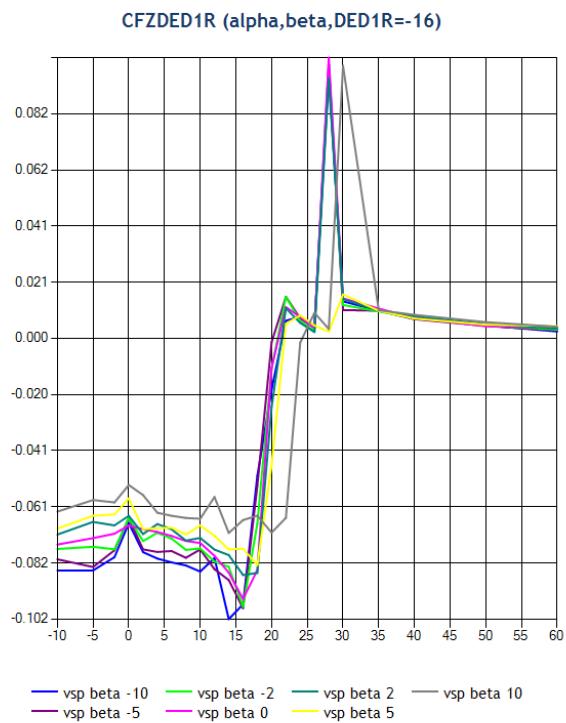
CFZDED1L (alpha,beta,DED1L=20)



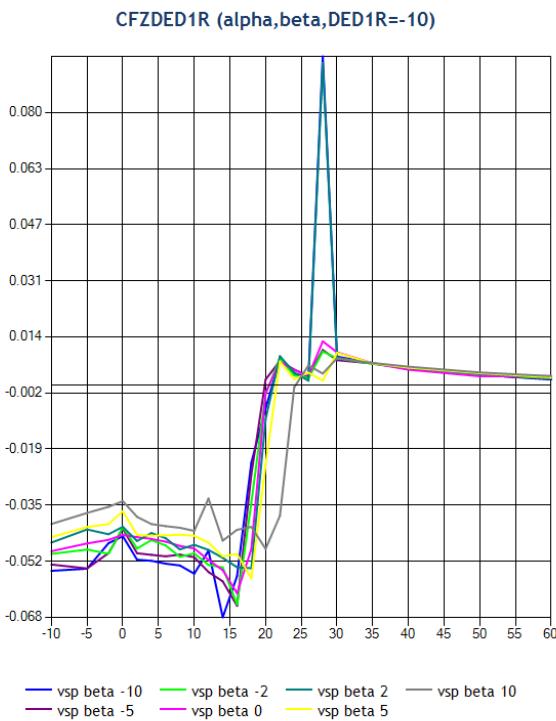
LIFT DUE TO ELEVON 1L



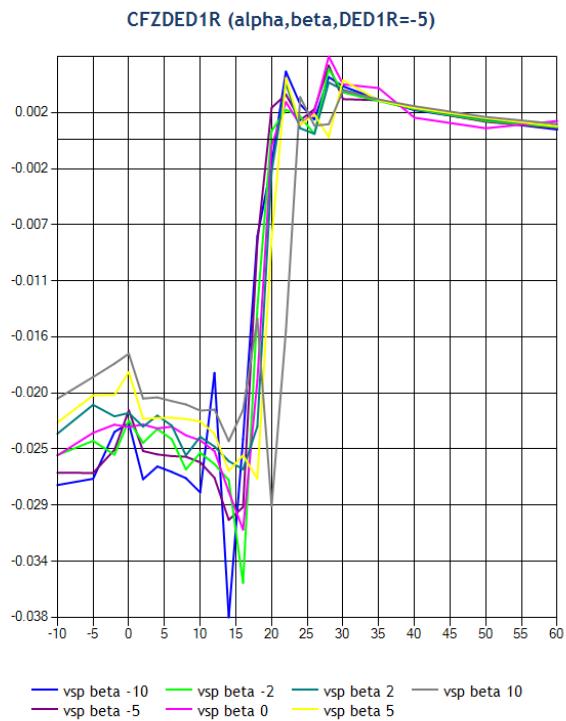
LIFT DUE TO ELEVON 1R



LIFT DUE TO ELEVON 1R

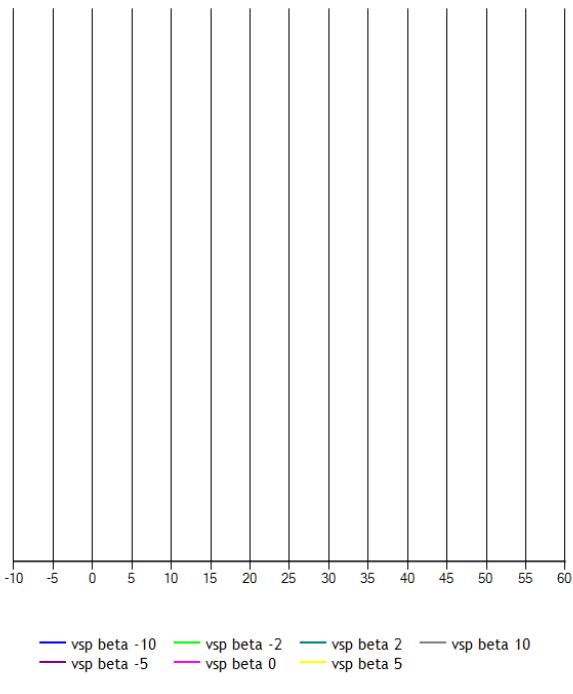


LIFT DUE TO ELEVON 1R



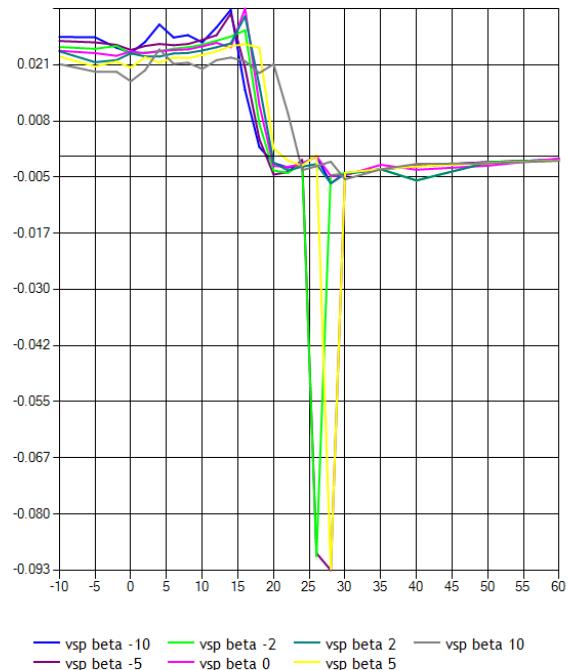
LIFT DUE TO ELEVON 1R

CFZDED1R (alpha,beta,DED1R=0)



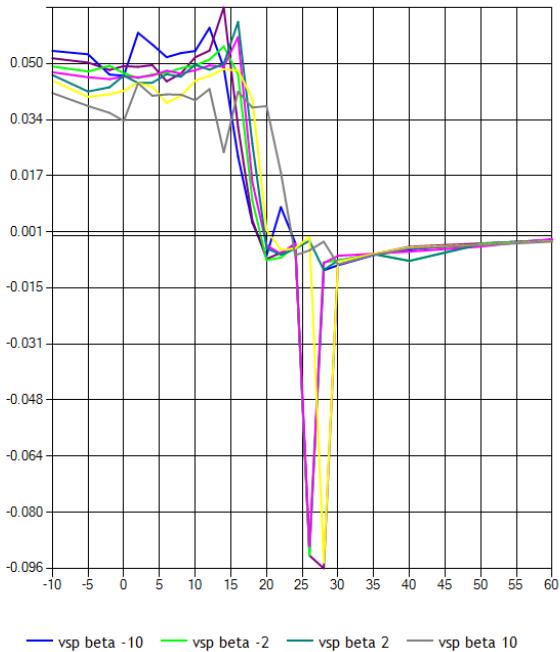
LIFT DUE TO ELEVON 1R

CFZDED1R (alpha,beta,DED1R=5)



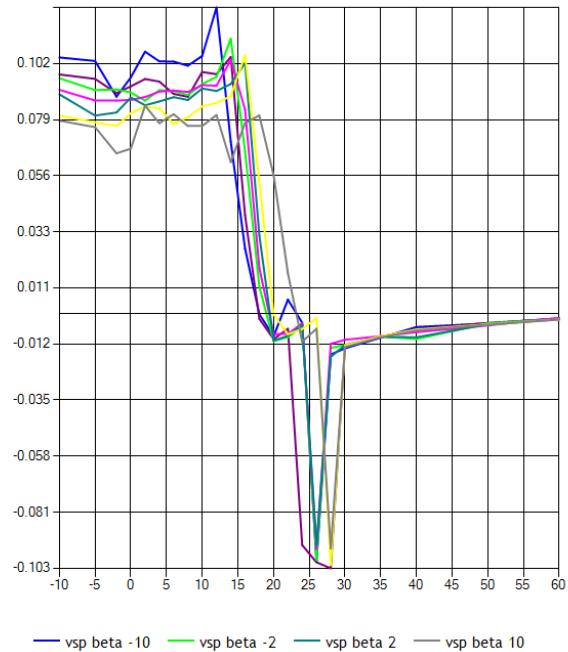
LIFT DUE TO ELEVON 1R

CFZDED1R (alpha,beta,DED1R=10)



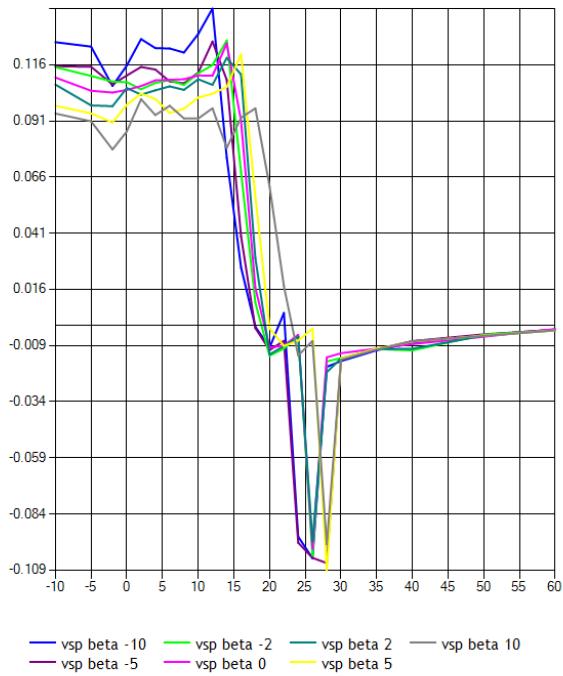
LIFT DUE TO ELEVON 1R

CFZDED1R (alpha,beta,DED1R=20)



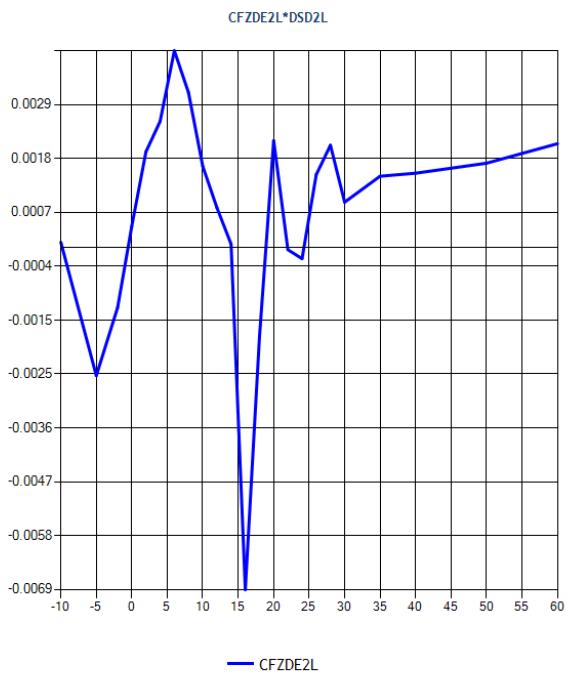
### LIFT DUE TO ELEVON 1R

**CFZDED1R (alpha,beta,DED1R=25)**



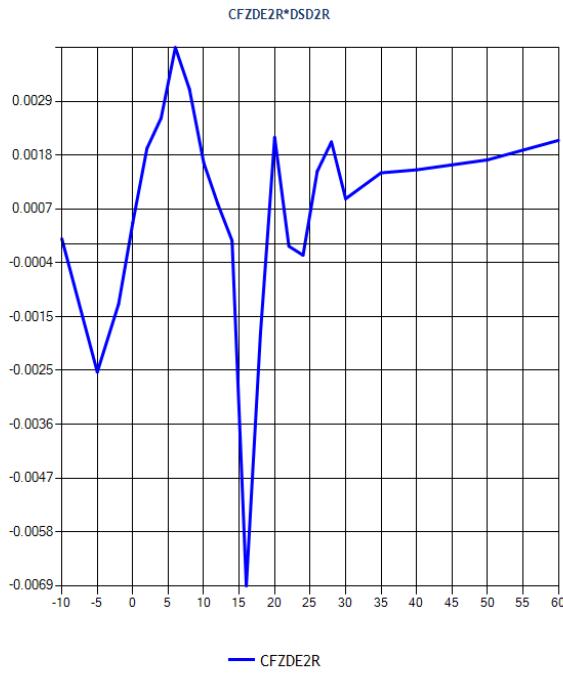
### LIFT DUE TO LE SLAT 2L

**CFZDE2L(alpha)**



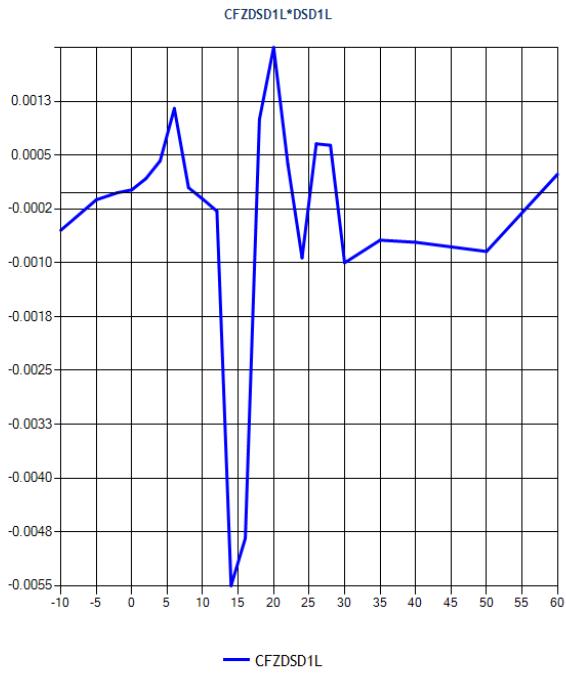
### LIFT DUE TO LE SLAT 2R

**CFZDE2R(alpha)**



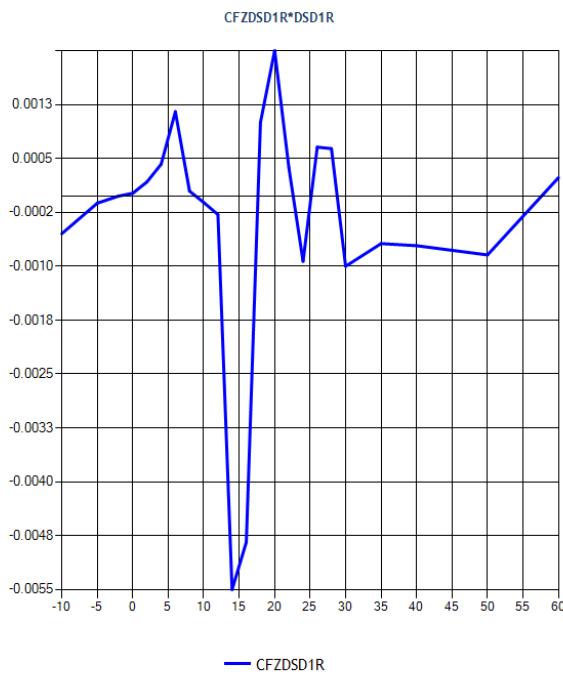
### LIFT DUE TO LE SLAT 1L

**CFZDSD1L(alpha)**



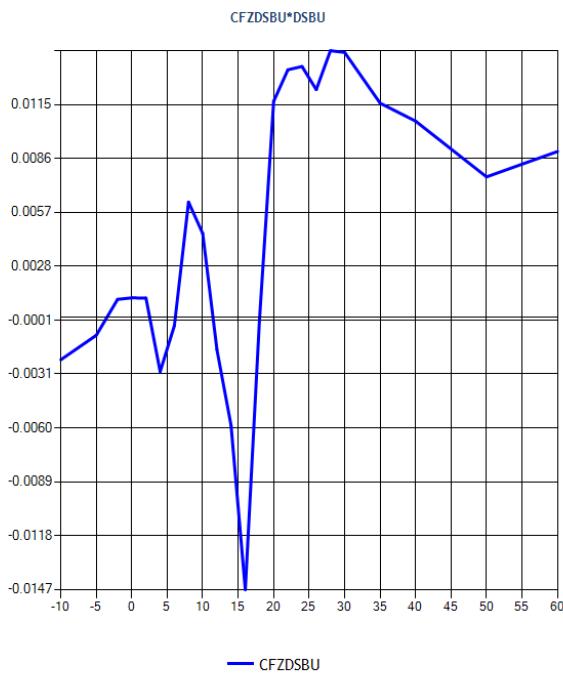
### LIFT DUE TO LE SLAT 1R

CFZDSD1R( $\alpha$ )



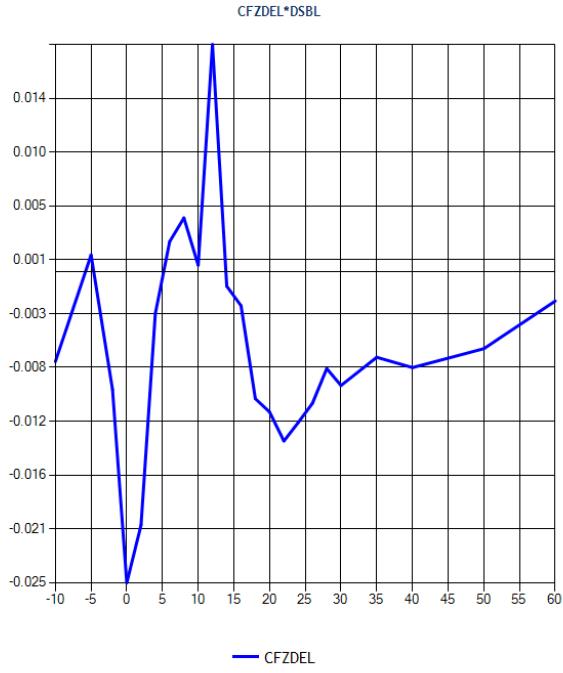
### LIFT DUE TO UPPER SPEEDBRAKE DEFLECTION

CFZDSBU( $\alpha$ )



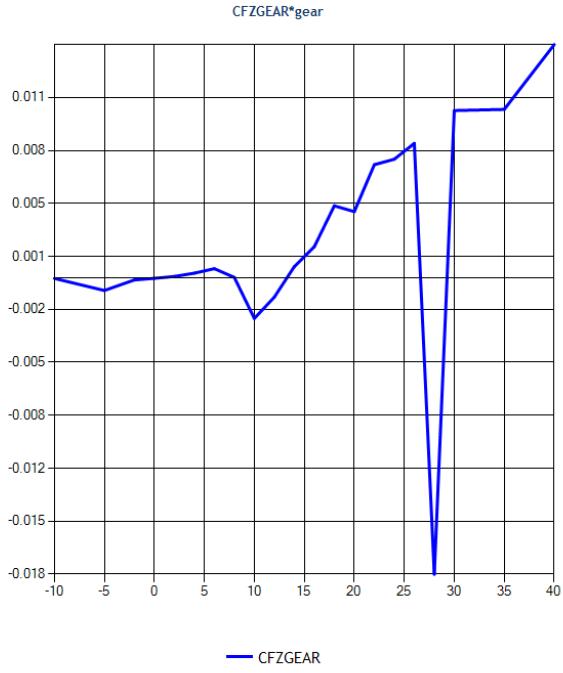
### LIFT DUE TO LOWER SPEEDBRAKE DEFLECTION

CFZDEL( $\alpha$ )



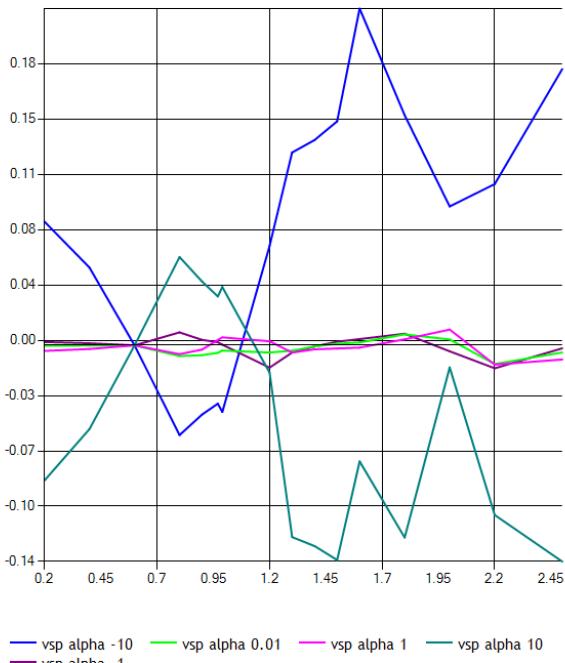
### LIFT INCREMENT DUE TO GEAR

CFZGEAR( $\alpha$ )



## LIFT DUE TO MACH

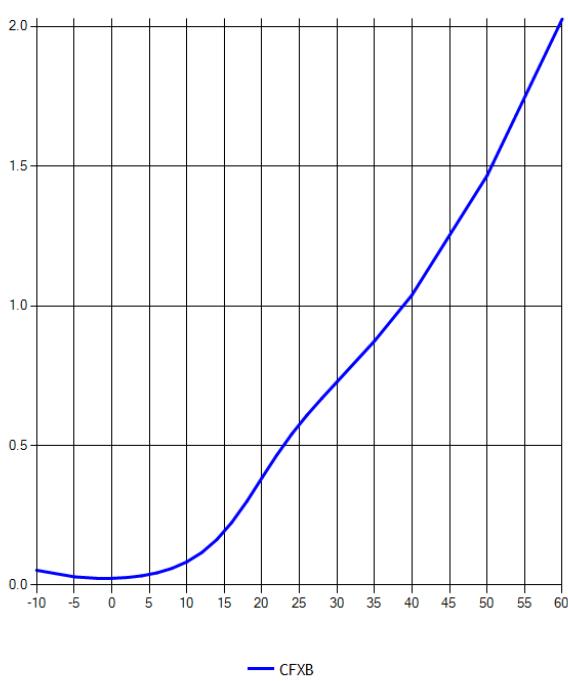
**CFZmn(mach,alpha)**



DRAG

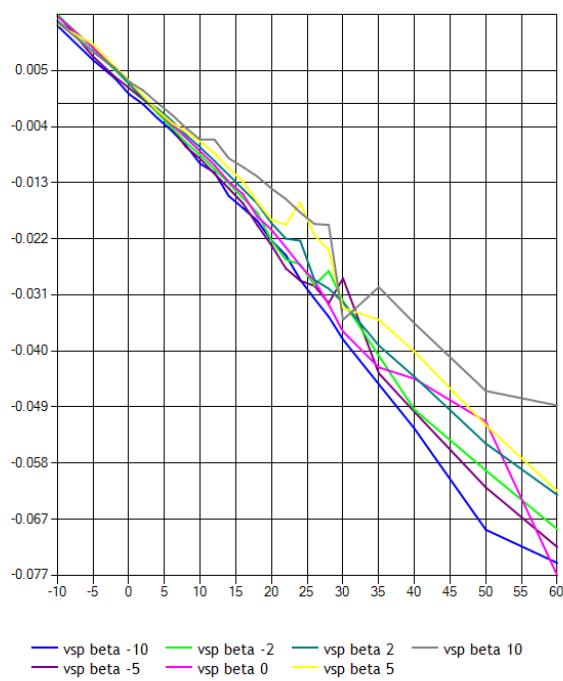
## BASIC DRAG

## CFXB(alpha)

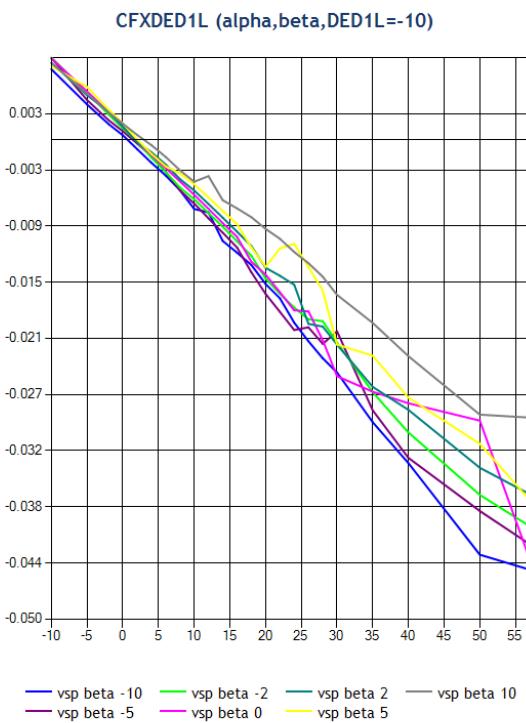


## DRAG DUE TO ELEVON 1L

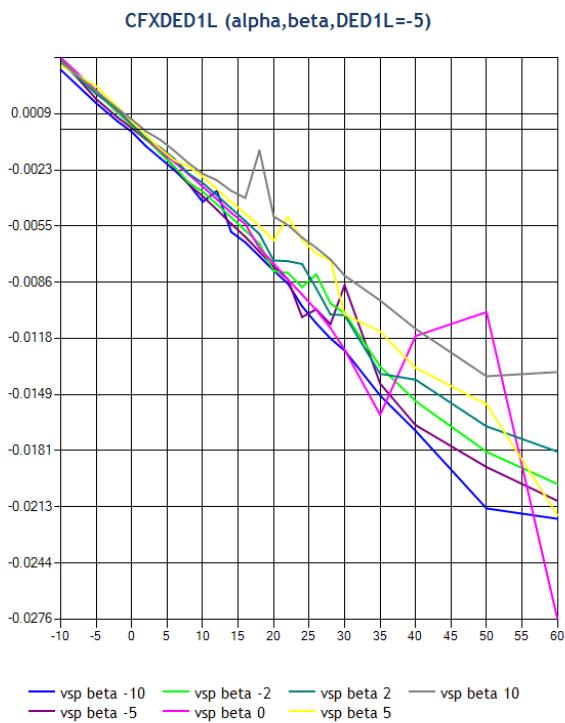
### CFXDED1L (alpha,beta,DED1L=-16)



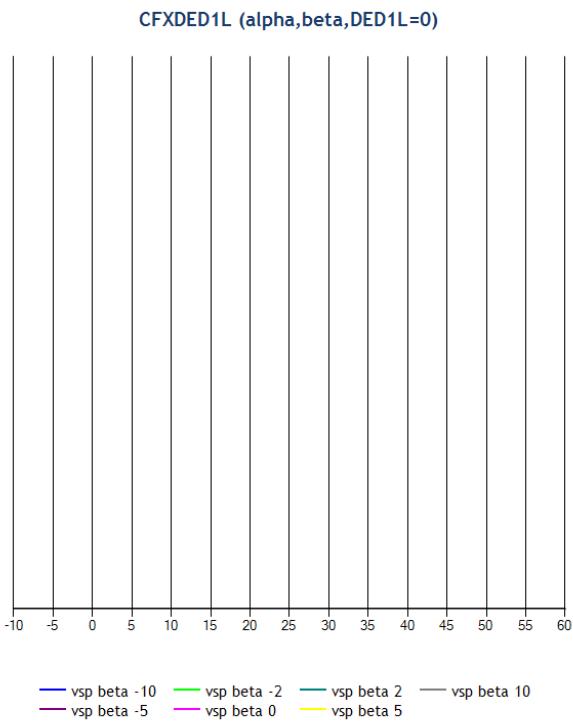
DRAG DUE TO ELEVON 1L



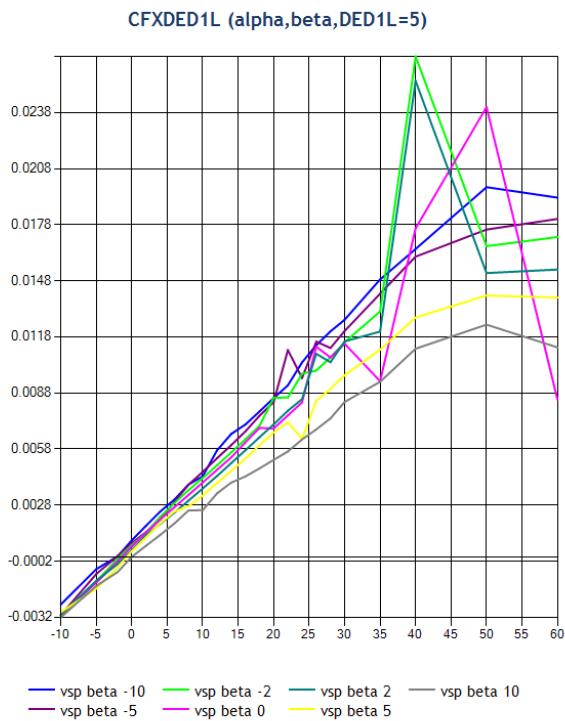
DRAG DUE TO ELEVON 1L



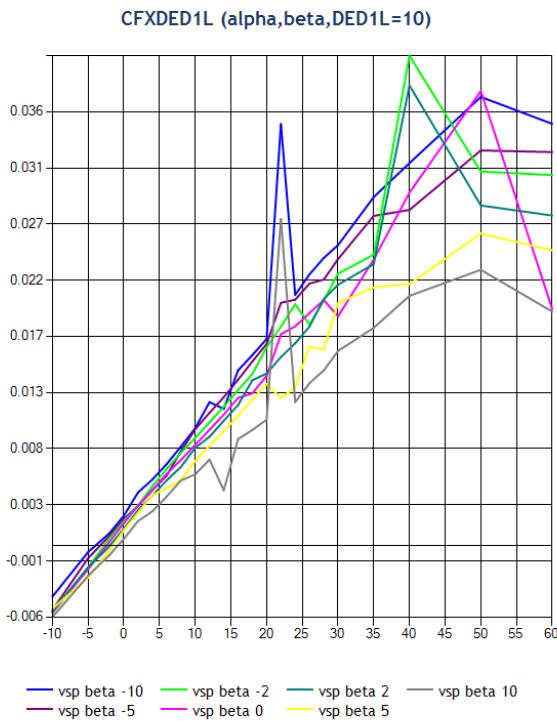
DRAG DUE TO ELEVON 1L



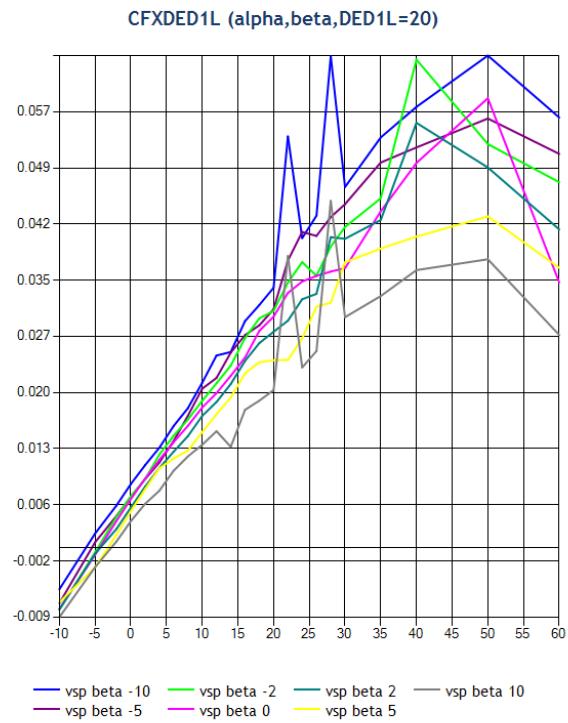
DRAG DUE TO ELEVON 1L



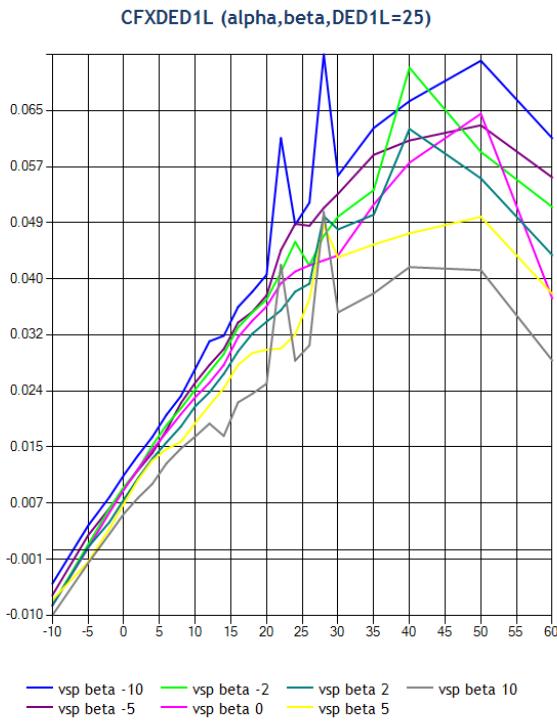
### DRAG DUE TO ELEVON 1L



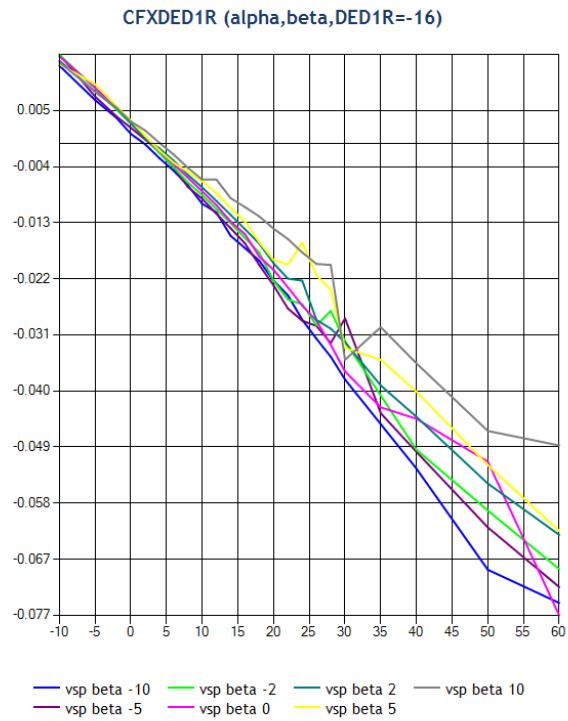
### DRAG DUE TO ELEVON 1L



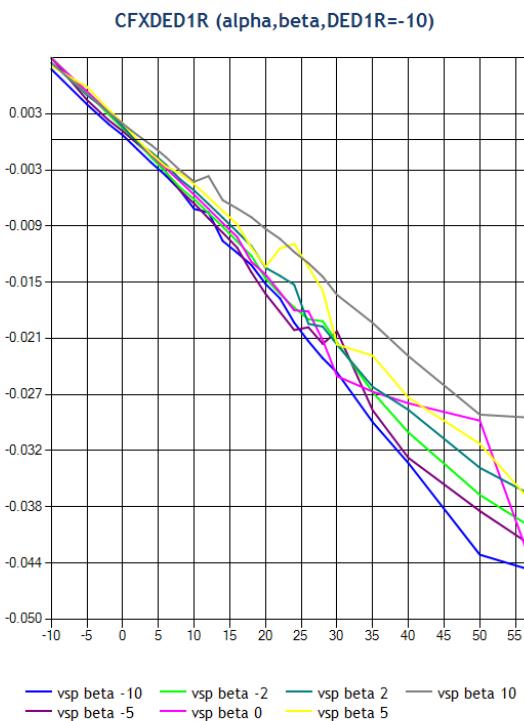
### DRAG DUE TO ELEVON 1L



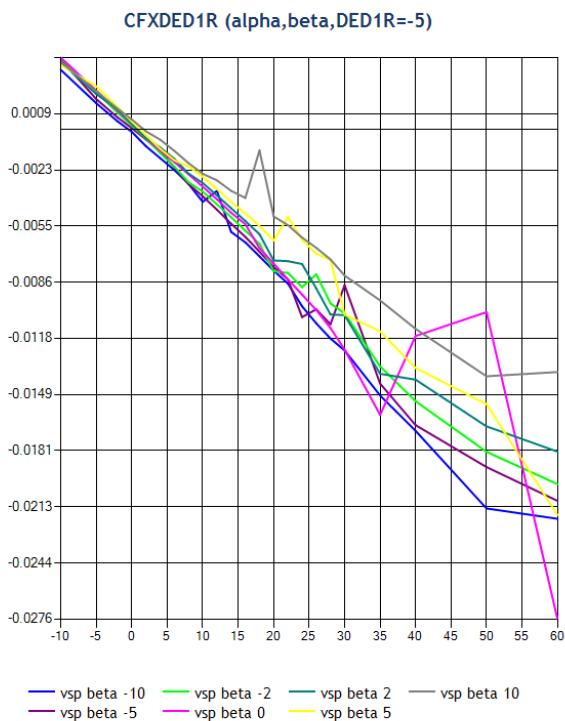
### DRAG DUE TO ELEVON 1R



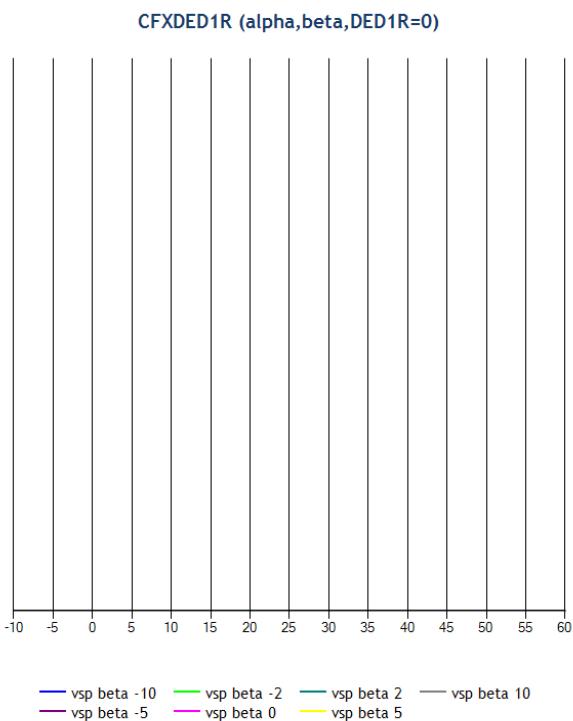
DRAG DUE TO ELEVON 1R



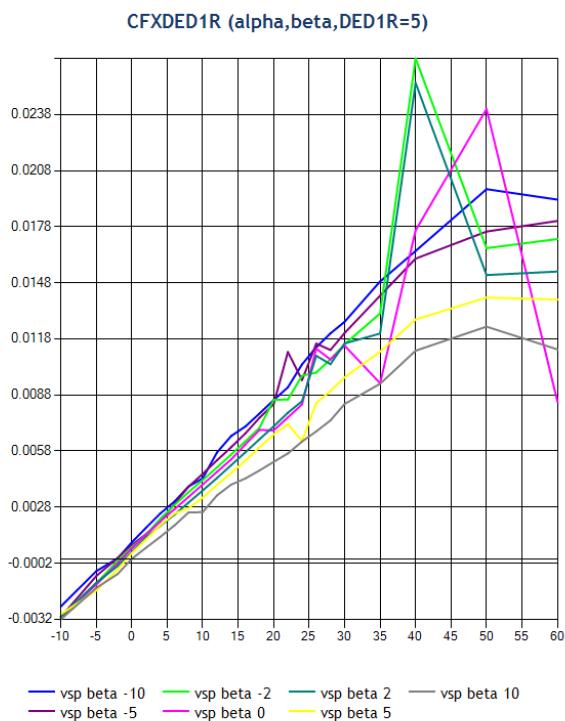
DRAG DUE TO ELEVON 1R



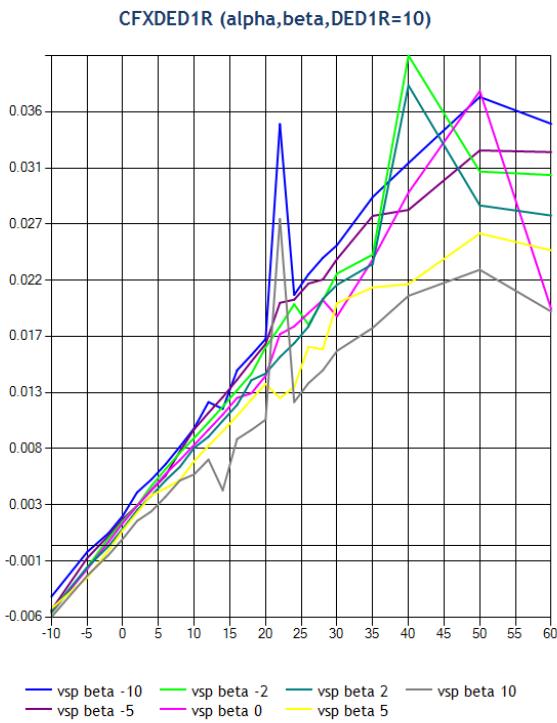
DRAG DUE TO ELEVON 1R



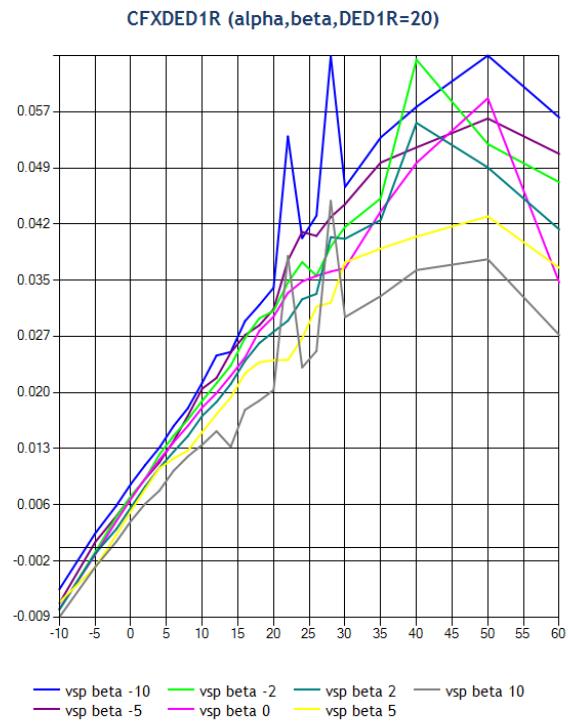
DRAG DUE TO ELEVON 1R



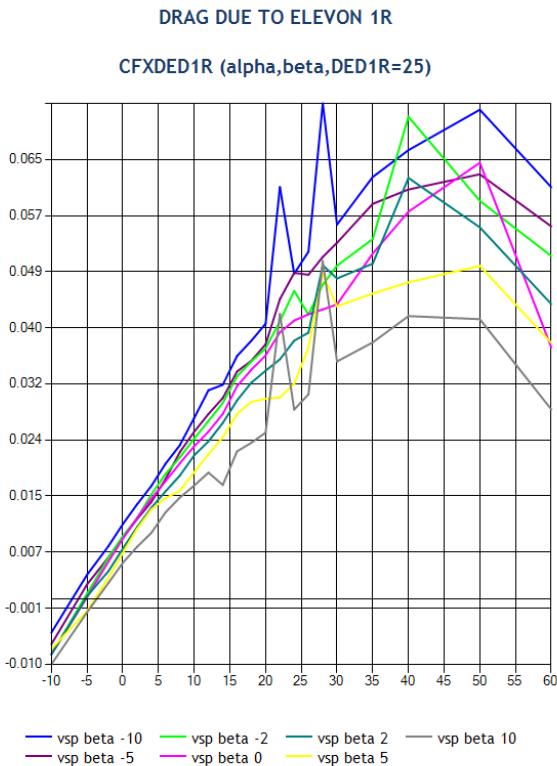
### DRAG DUE TO ELEVON 1R



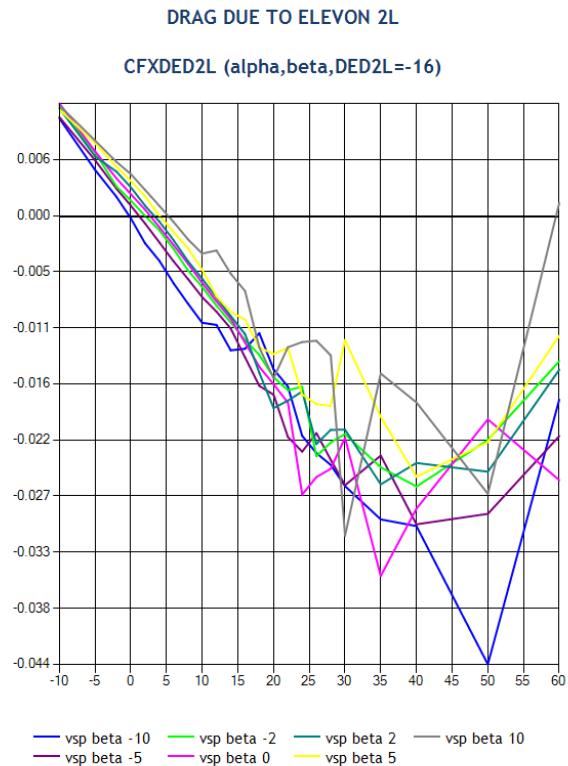
### DRAG DUE TO ELEVON 1R



### DRAG DUE TO ELEVON 1R

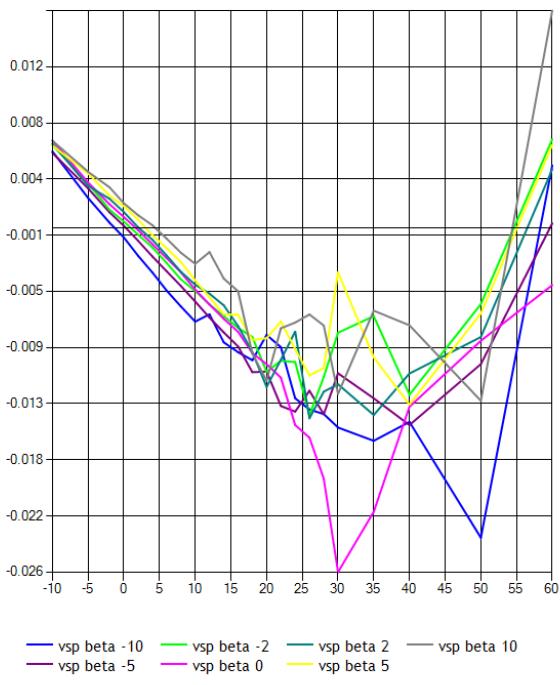


### DRAG DUE TO ELEVON 2L



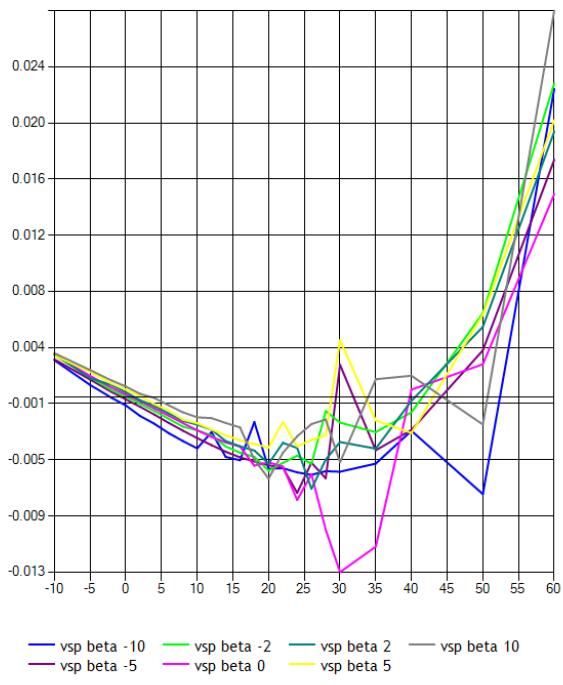
DRAG DUE TO ELEVON 2L

CFXDED2L (alpha,beta,DED2L=-10)



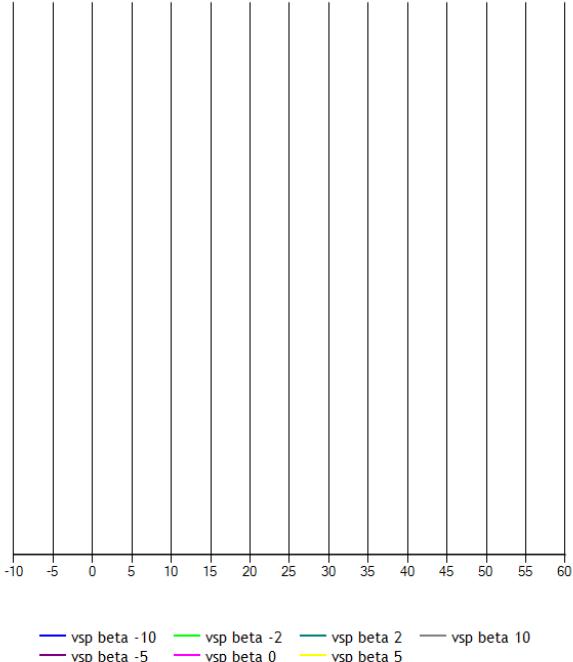
DRAG DUE TO ELEVON 2L

CFXDED2L (alpha,beta,DED2L=-5)



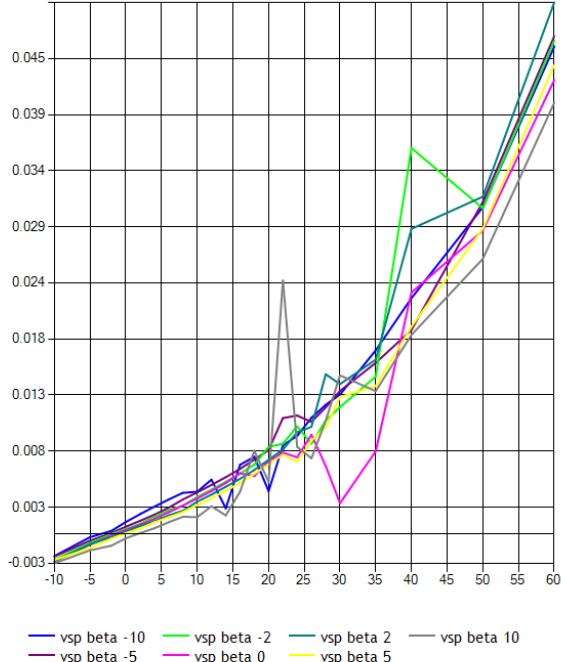
DRAG DUE TO ELEVON 2L

CFXDED2L (alpha,beta,DED2L=0)

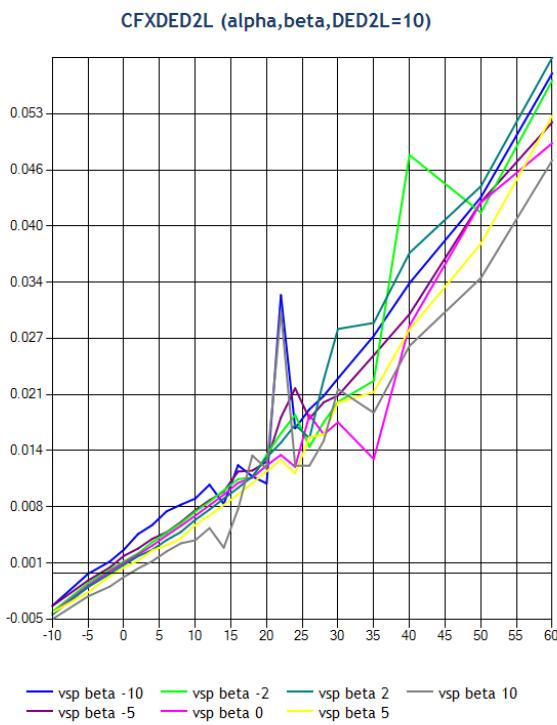


DRAG DUE TO ELEVON 2L

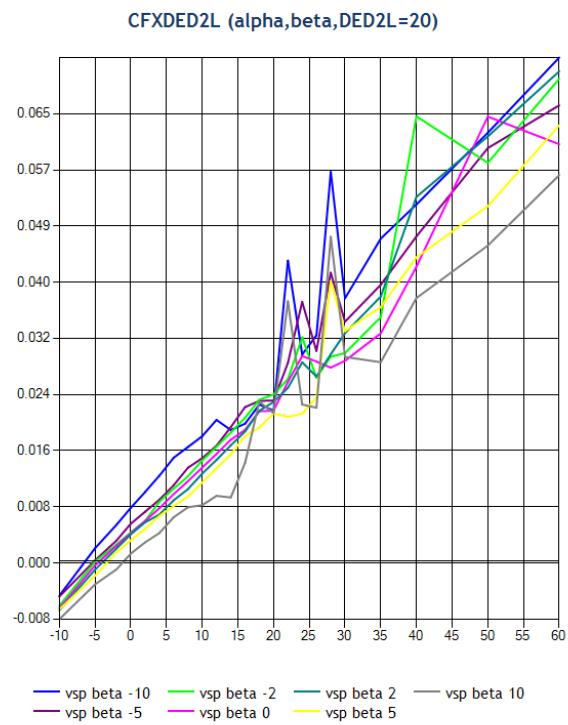
CFXDED2L (alpha,beta,DED2L=5)



DRAG DUE TO ELEVON 2L



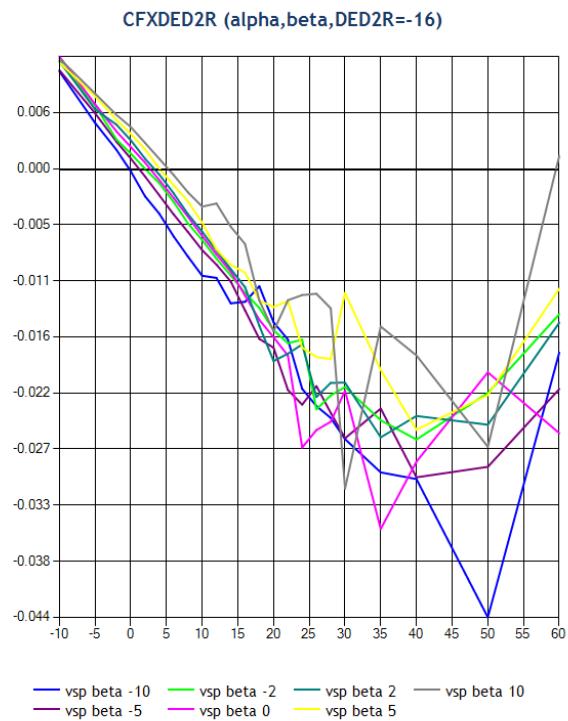
DRAG DUE TO ELEVON 2L



DRAG DUE TO ELEVON 2L

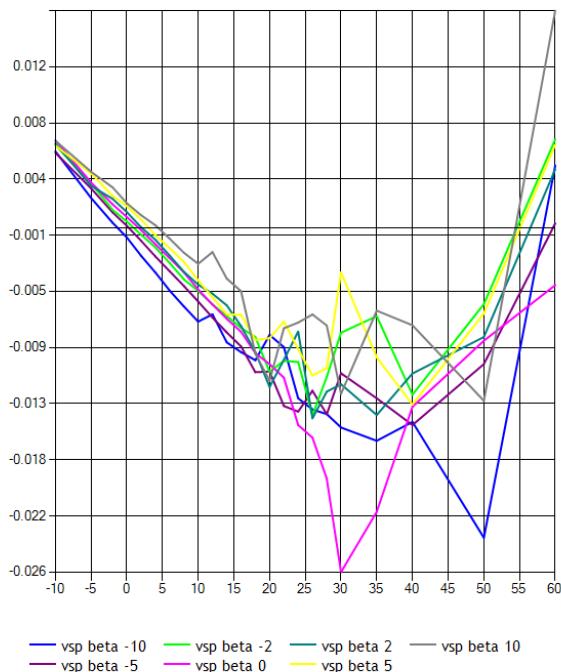


DRAG DUE TO ELEVON 2R



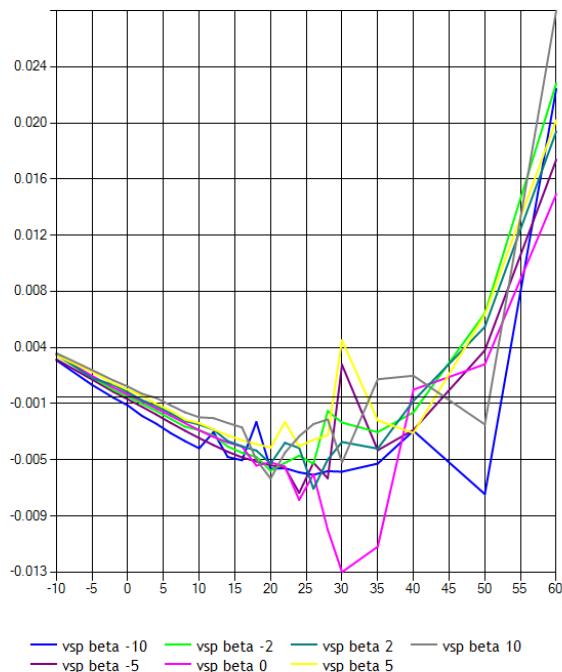
DRAG DUE TO ELEVON 2R

CFXDED2R (alpha,beta,DED2R=-10)



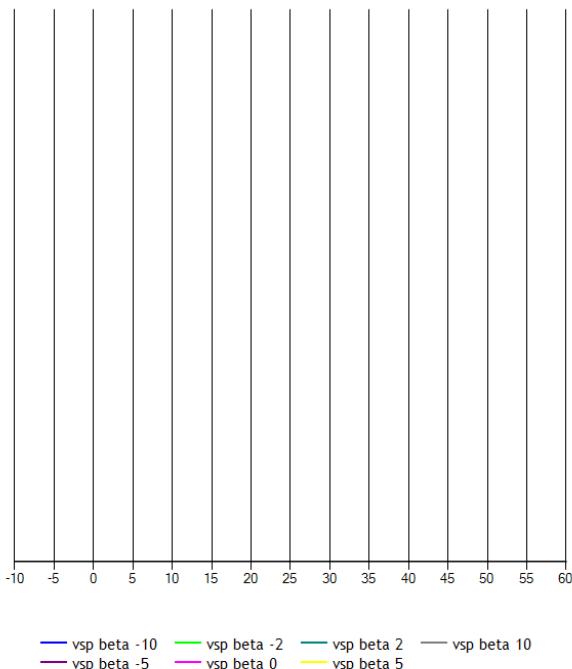
DRAG DUE TO ELEVON 2R

CFXDED2R (alpha,beta,DED2R=-5)



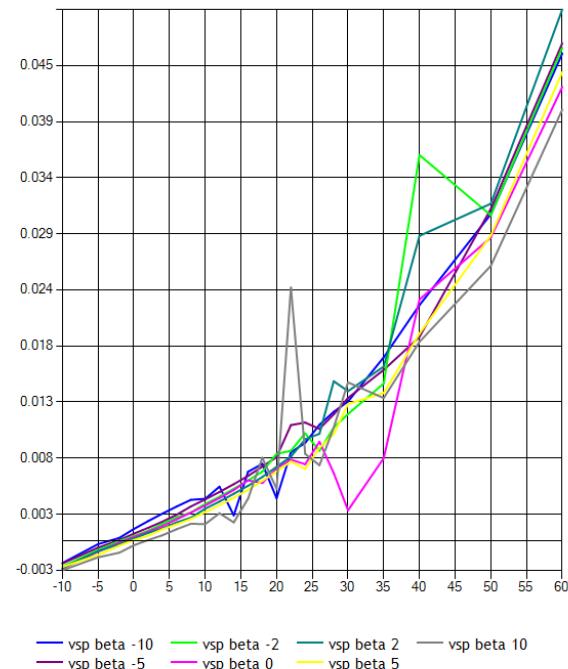
DRAG DUE TO ELEVON 2R

CFXDED2R (alpha,beta,DED2R=0)

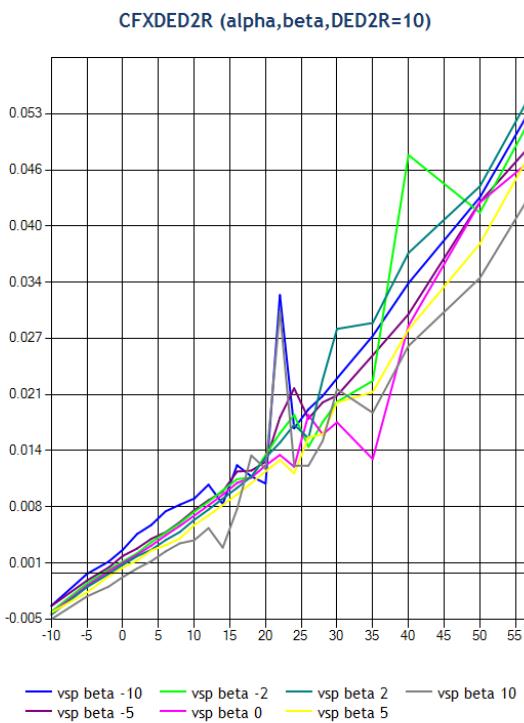


DRAG DUE TO ELEVON 2R

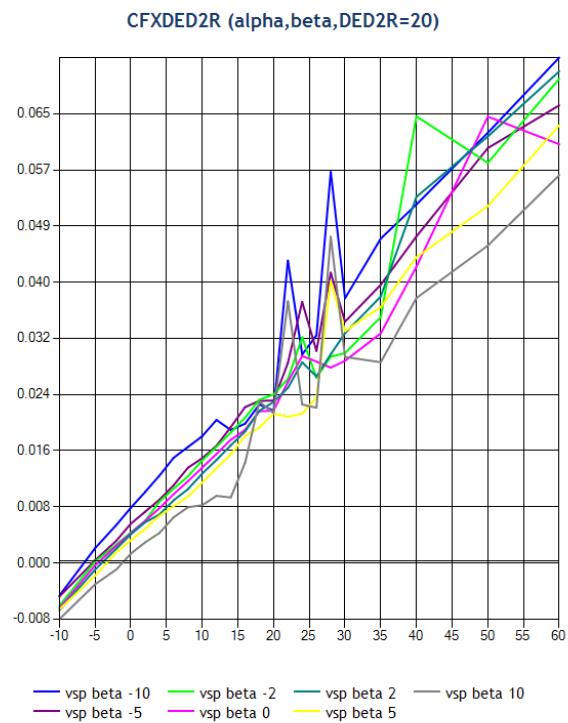
CFXDED2R (alpha,beta,DED2R=5)



DRAG DUE TO ELEVON 2R



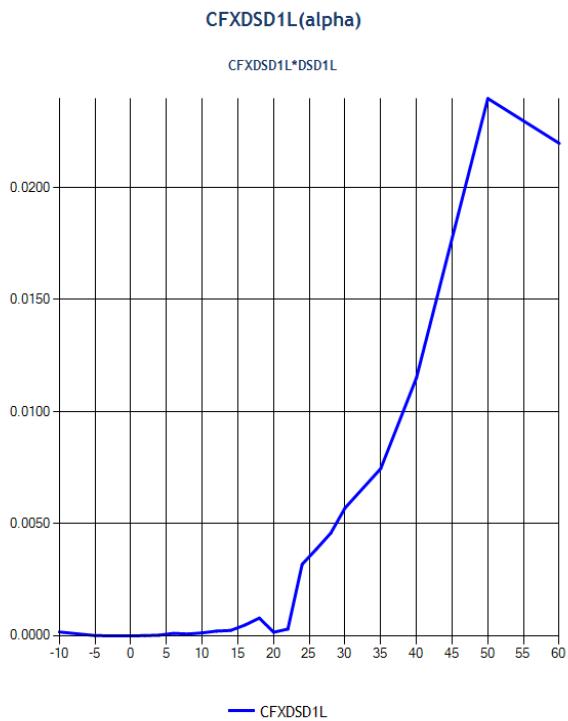
DRAG DUE TO ELEVON 2R



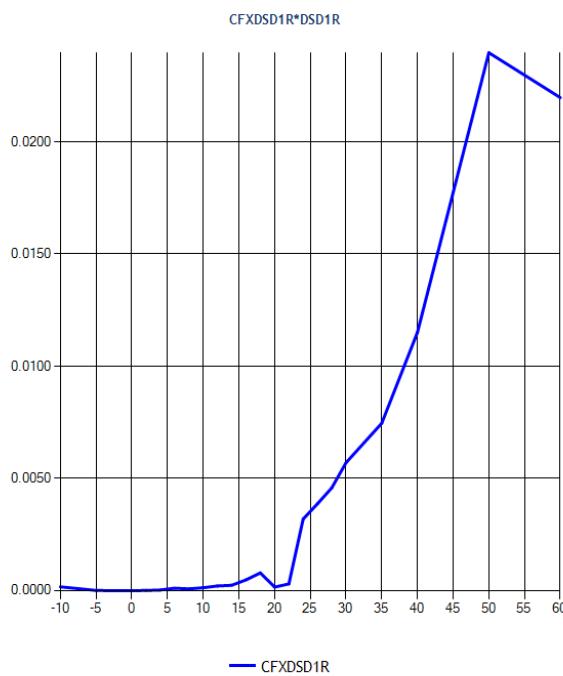
DRAG DUE TO ELEVON 2R



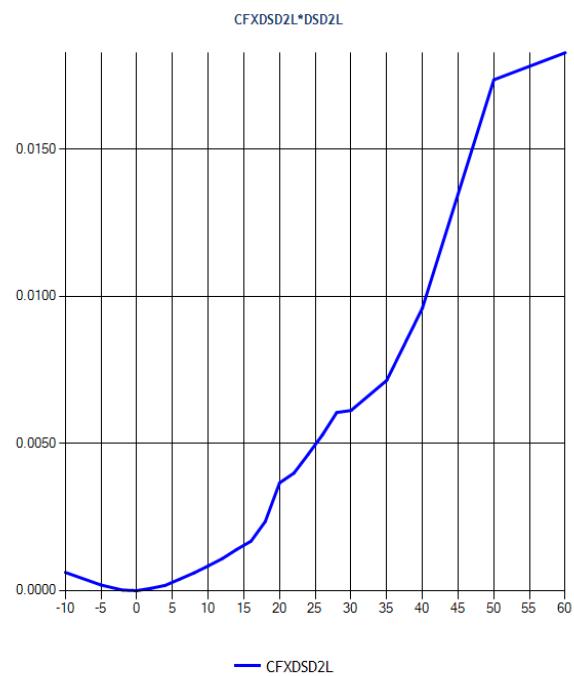
DRAG DUE TO LE SLAT 1L



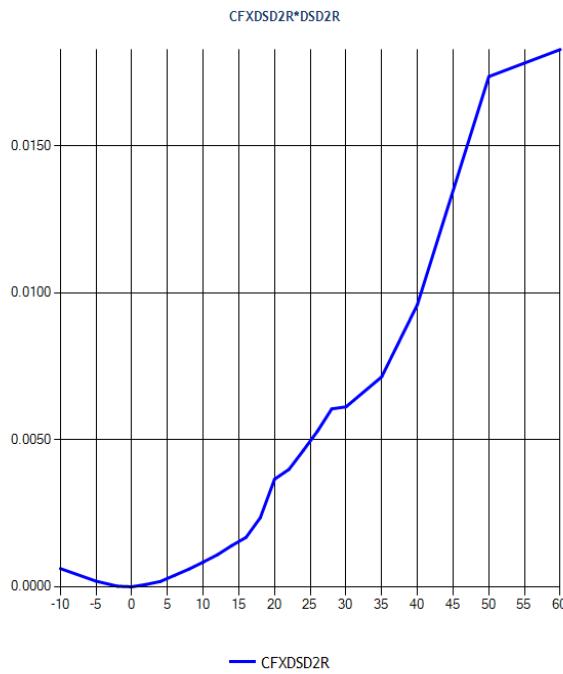
DRAG DUE TO LE SLAT 1R

CFXDSD1R( $\alpha$ )

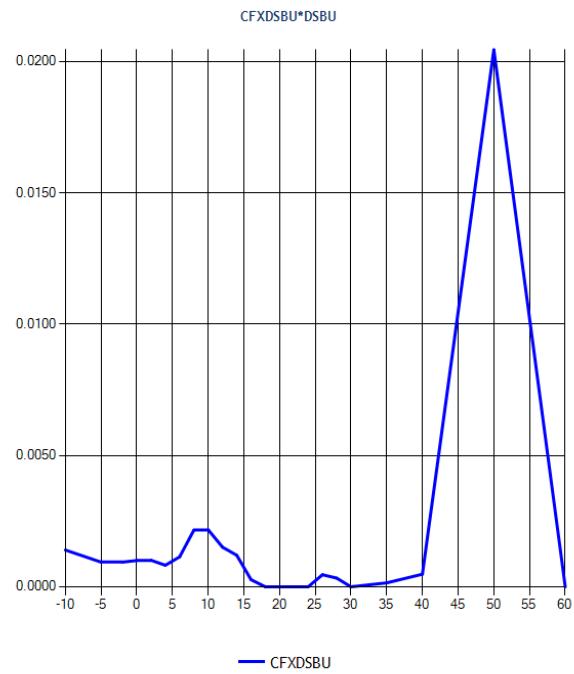
DRAG DUE TO LE SLAT 2L

CFXDSD2L( $\alpha$ )

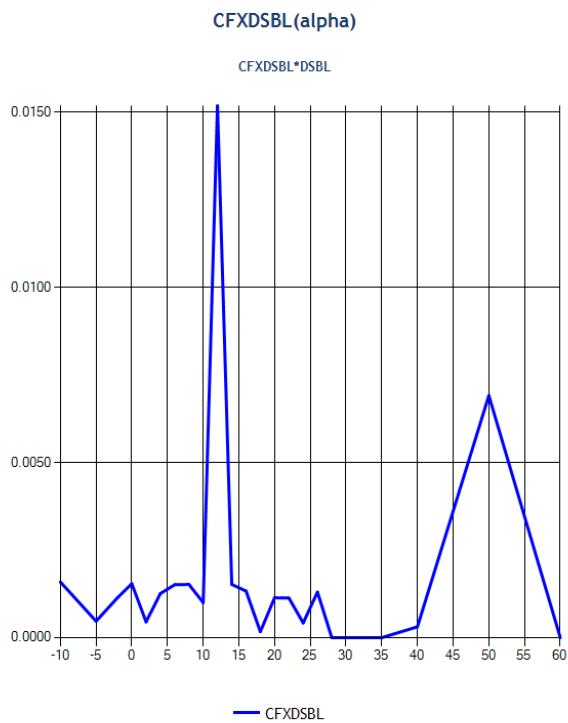
DRAG DUE TO LE SLAT 2R

CFXDSD2R( $\alpha$ )

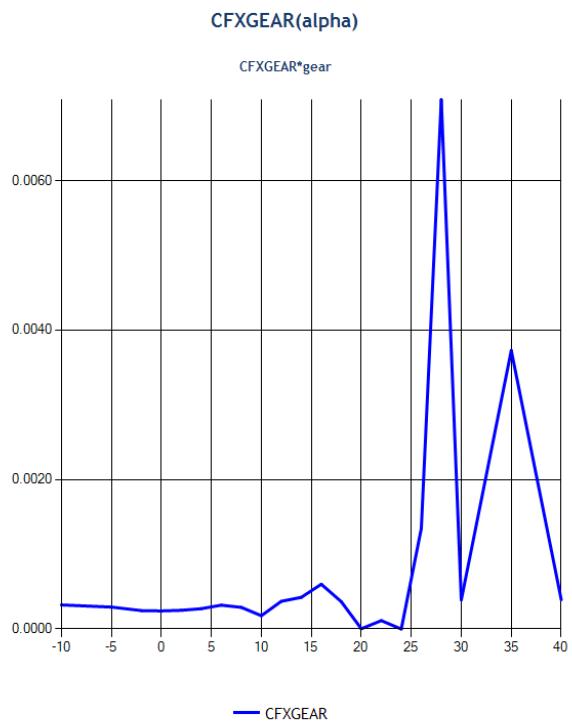
DRAG DUE TO UPPER SPEEDBRAKE DEFLECTION

CFXDSBU( $\alpha$ )

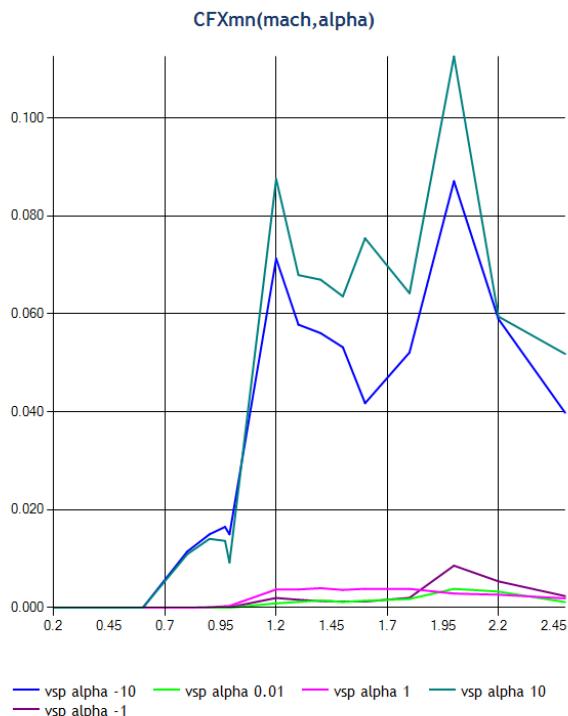
### DRAG DUE TO LOWER SPEEDBRAKE DEFLECTION



### DRAG INCREMENT DUE TO GEAR

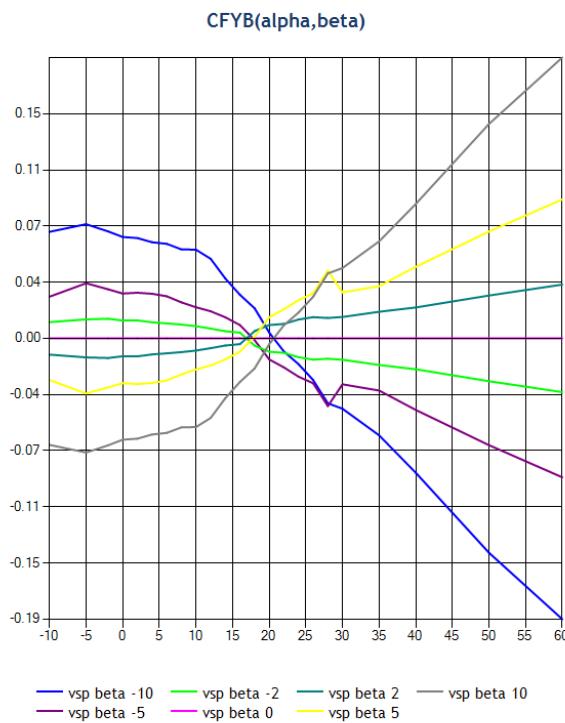


### DRAG DUE TO MACH

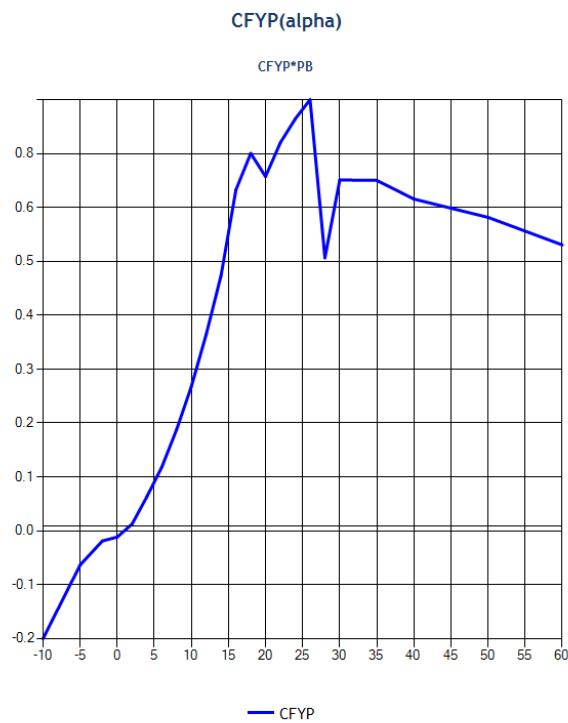


SIDE

BASIC SIDE FORCE



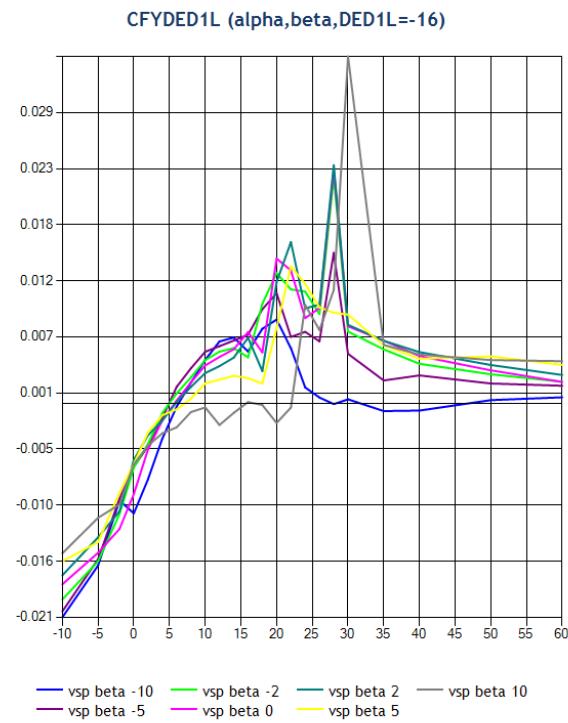
SIDE FORCE DUE TO ROLL RATE



SIDE FORCE DUE TO YAW RATE

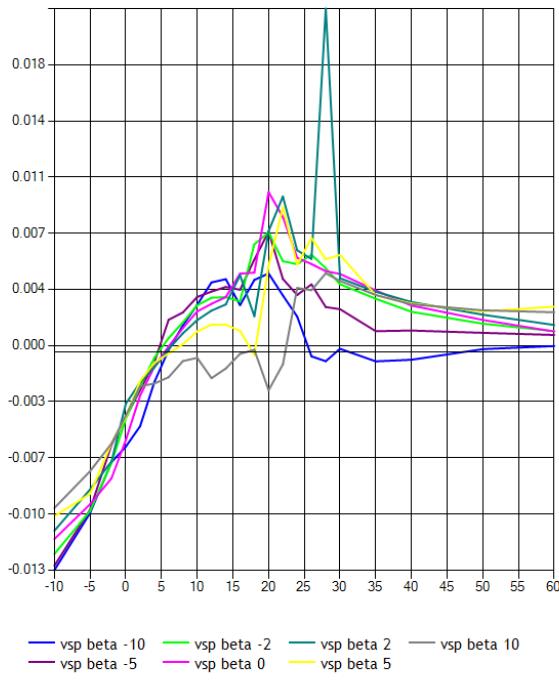


SIDE FORCE DUE TO ELEVON 1L DEFLECTION



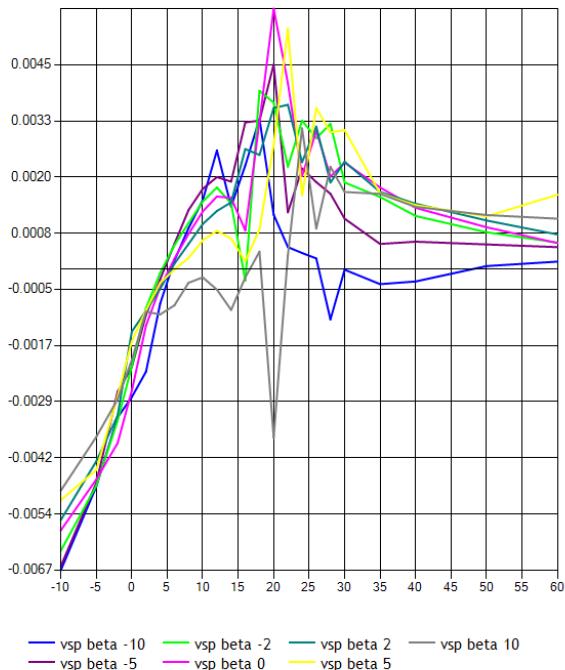
SIDE FORCE DUE TO ELEVON 1L DEFLECTION

CFYDED1L (alpha,beta,DED1L=-10)



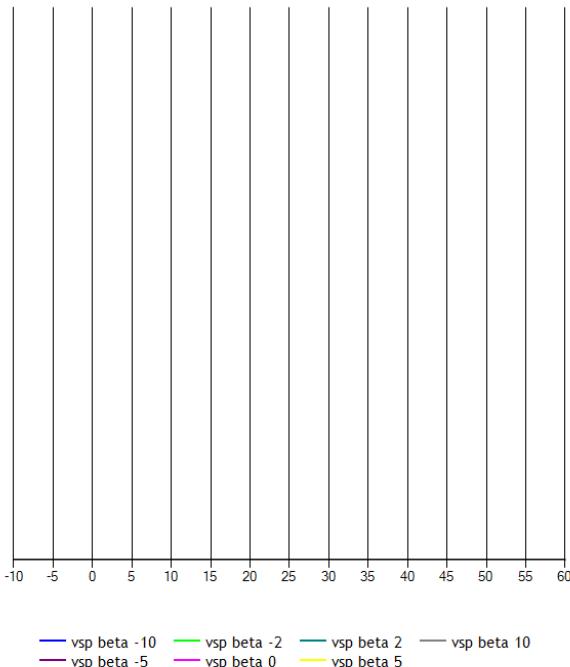
SIDE FORCE DUE TO ELEVON 1L DEFLECTION

CFYDED1L (alpha,beta,DED1L=-5)



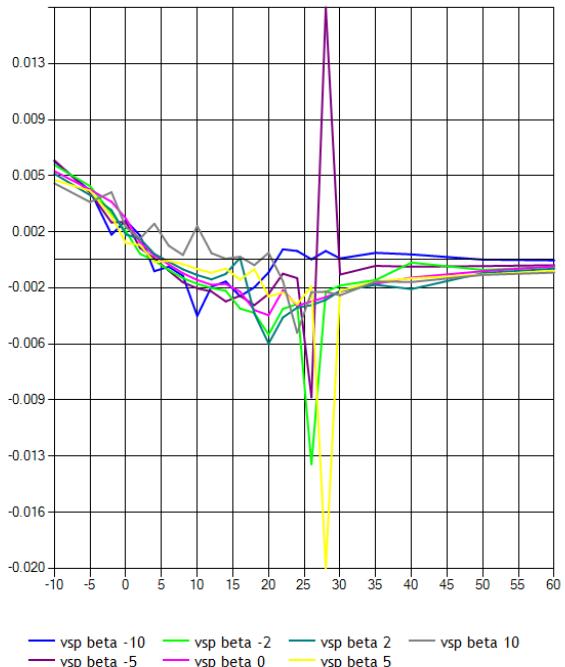
SIDE FORCE DUE TO ELEVON 1L DEFLECTION

CFYDED1L (alpha,beta,DED1L=0)



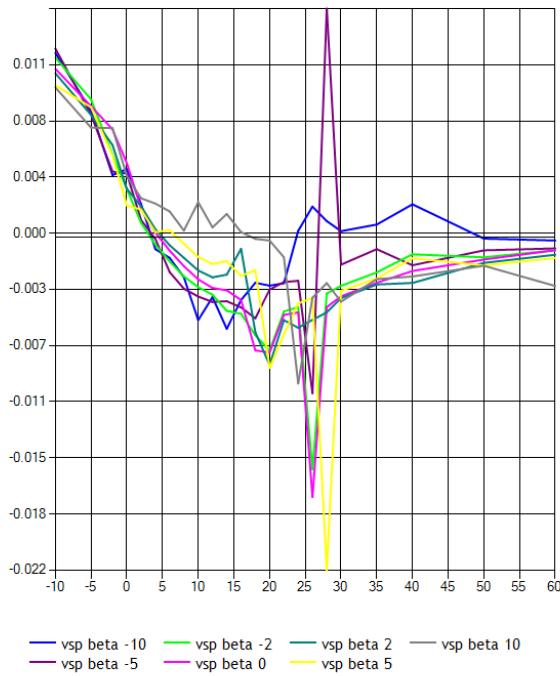
SIDE FORCE DUE TO ELEVON 1L DEFLECTION

CFYDED1L (alpha,beta,DED1L=5)



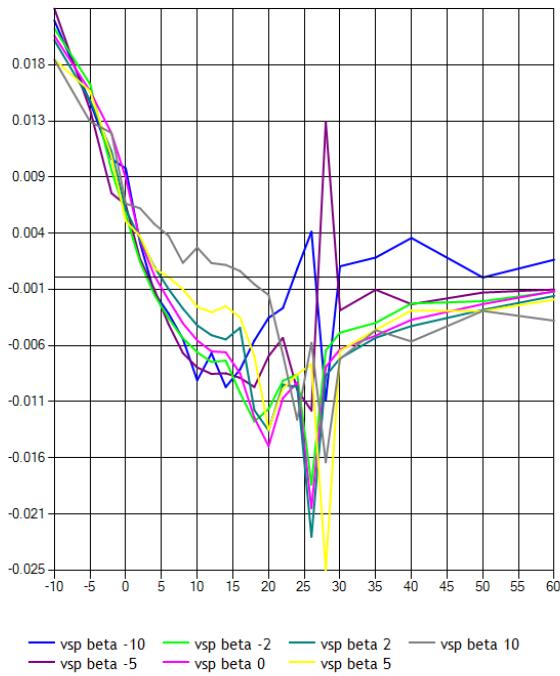
### SIDE FORCE DUE TO ELEVON 1L DEFLECTION

CFYDED1L (alpha,beta,DED1L=10)



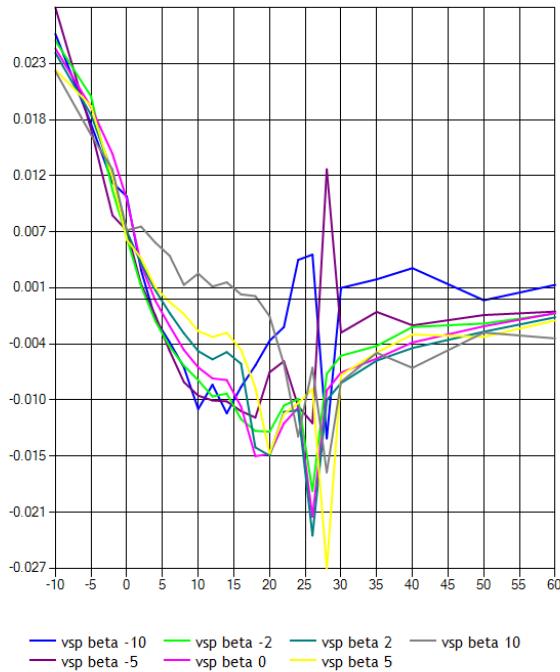
### SIDE FORCE DUE TO ELEVON 1L DEFLECTION

CFYDED1L (alpha,beta,DED1L=20)



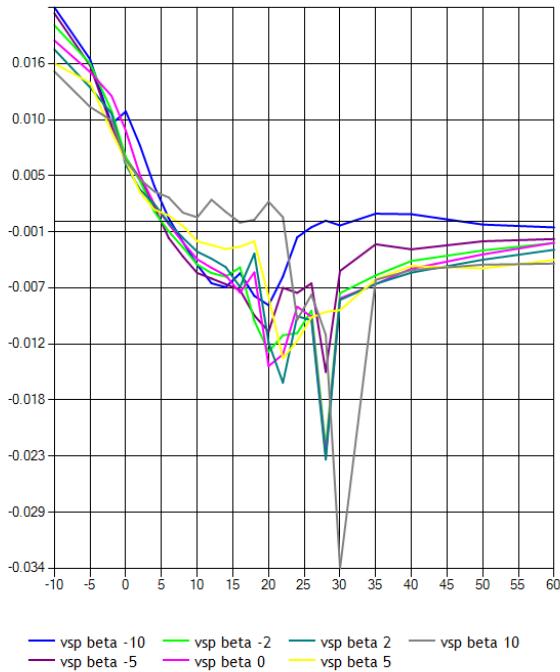
### SIDE FORCE DUE TO ELEVON 1L DEFLECTION

CFYDED1L (alpha,beta,DED1L=25)

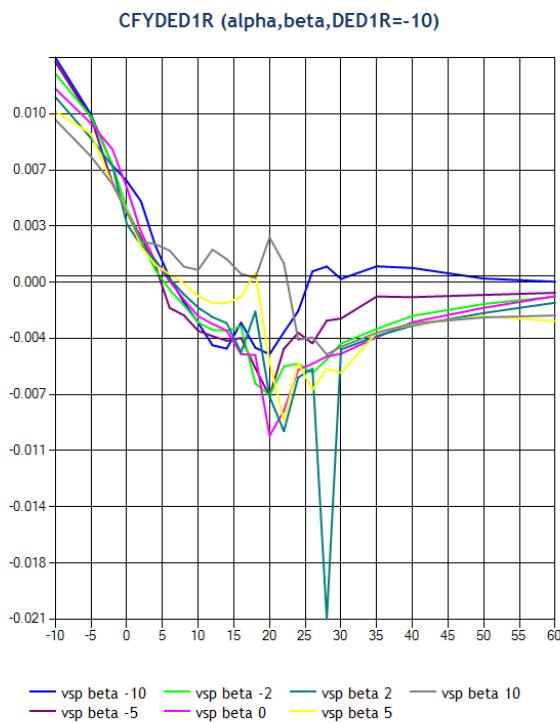


### SIDE FORCE DUE TO ELEVON 1R DEFLECTION

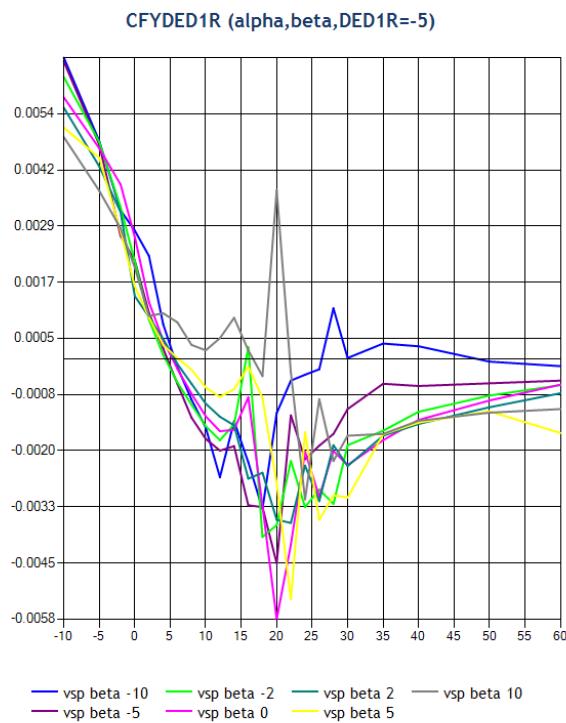
CFYDED1R (alpha,beta,DED1R=-16)



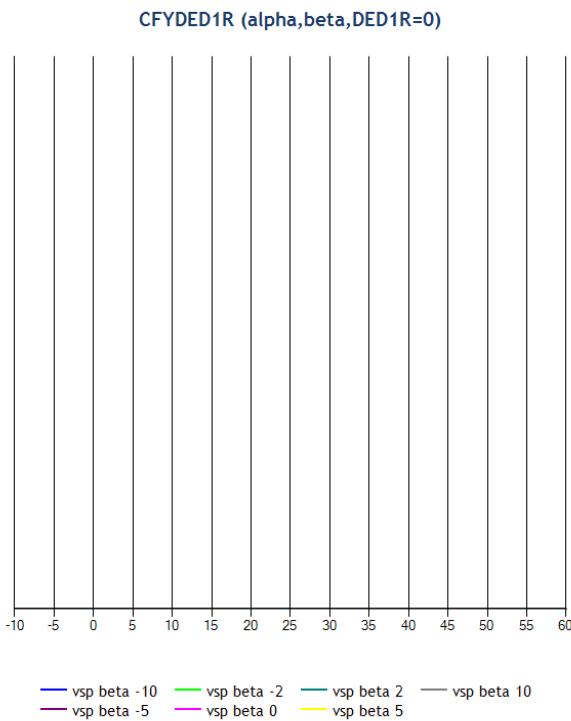
SIDE FORCE DUE TO ELEVON 1R DEFLECTION



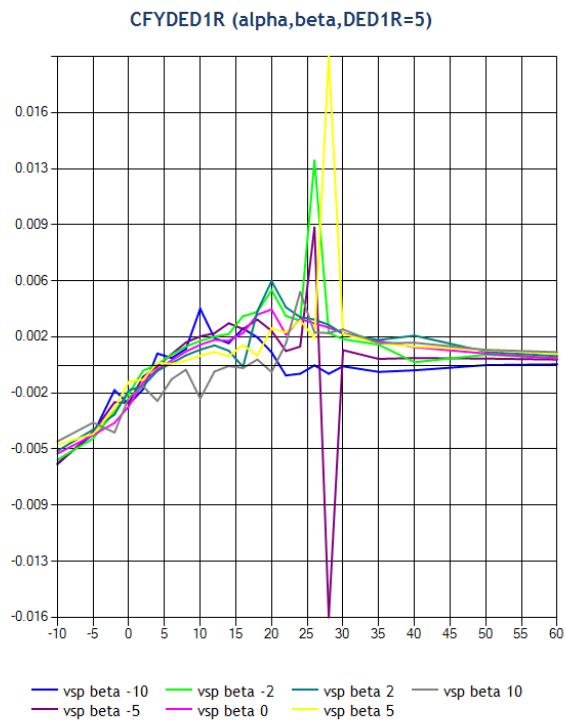
SIDE FORCE DUE TO ELEVON 1R DEFLECTION



SIDE FORCE DUE TO ELEVON 1R DEFLECTION

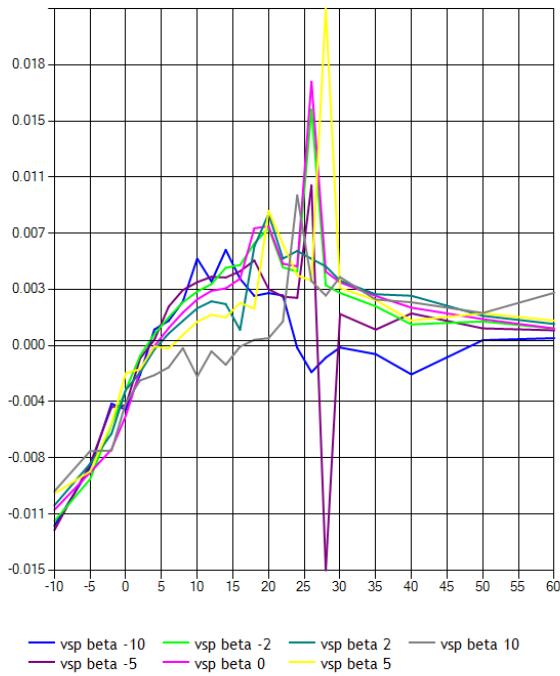


SIDE FORCE DUE TO ELEVON 1R DEFLECTION



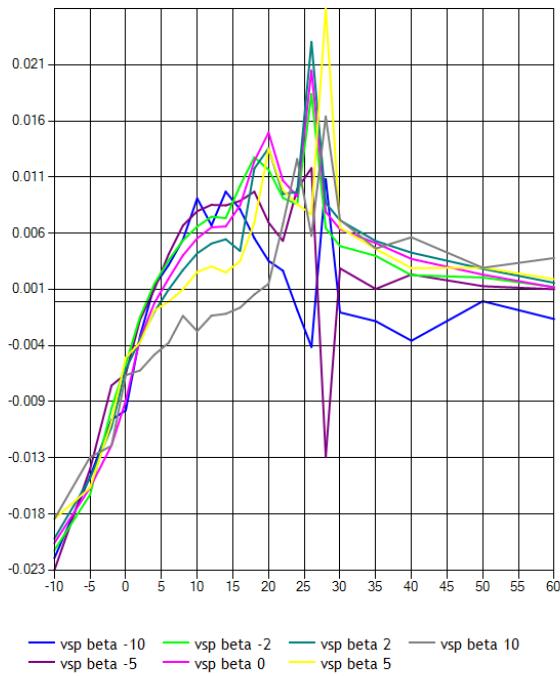
### SIDE FORCE DUE TO ELEVON 1R DEFLECTION

CFYDED1R (alpha,beta,DED1R=10)



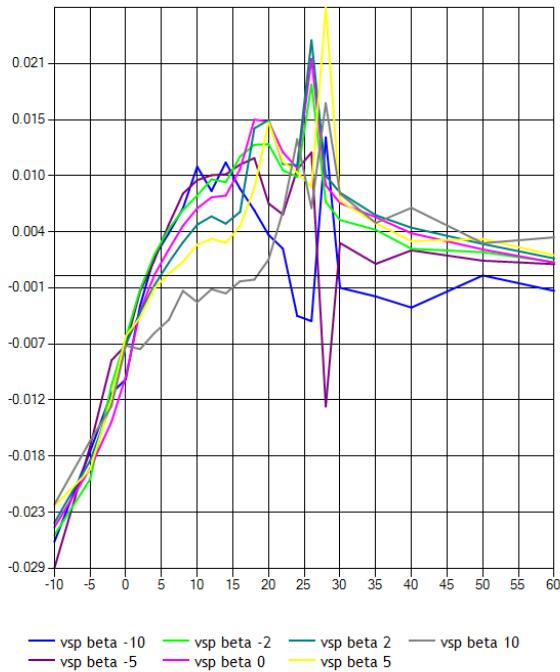
### SIDE FORCE DUE TO ELEVON 1R DEFLECTION

CFYDED1R (alpha,beta,DED1R=20)



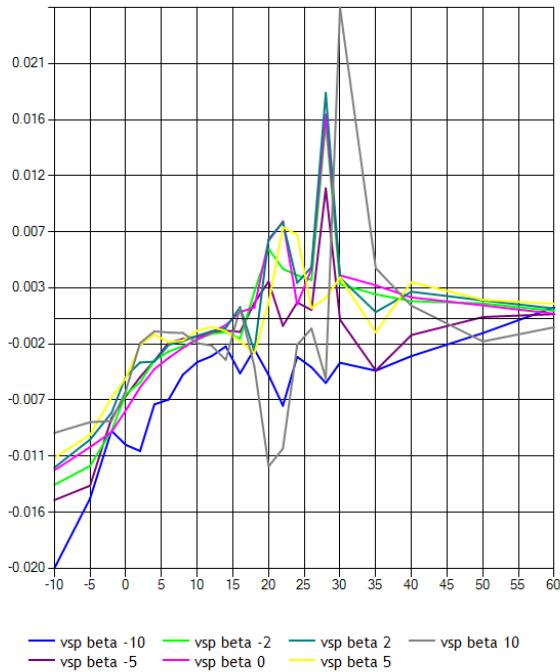
### SIDE FORCE DUE TO ELEVON 1R DEFLECTION

CFYDED1R (alpha,beta,DED1R=25)

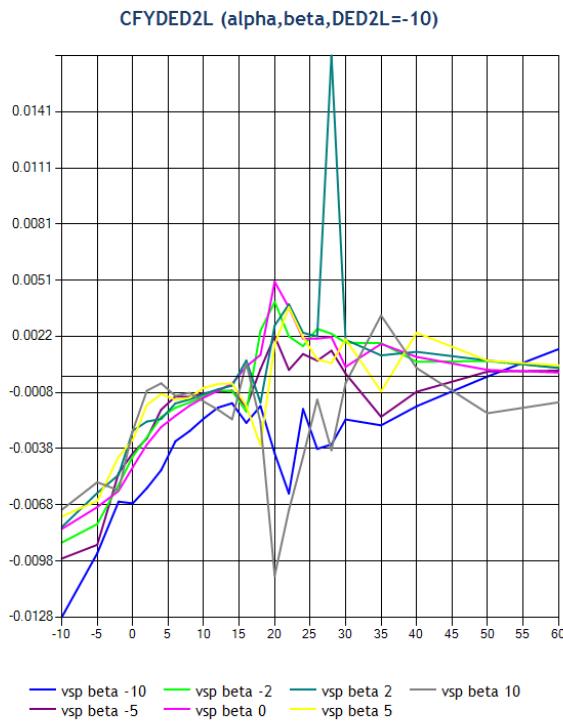


### SIDE FORCE DUE TO ELEVON 2L DEFLECTION

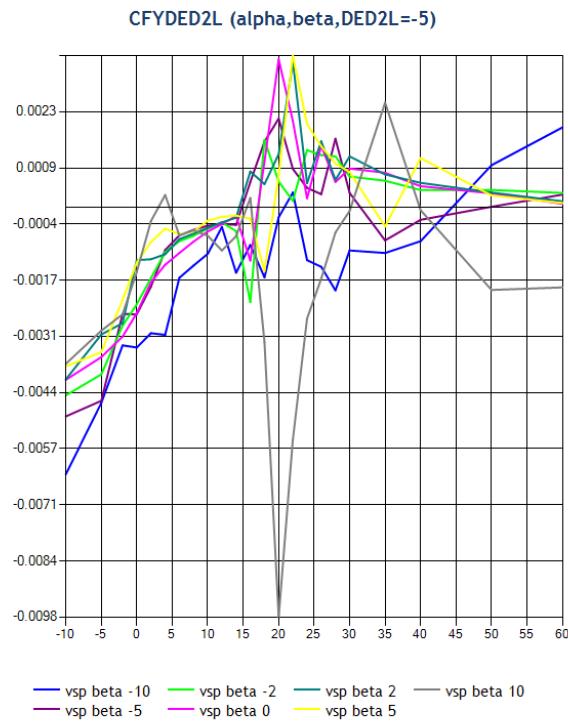
CFYDED2L (alpha,beta,DED2L=-16)



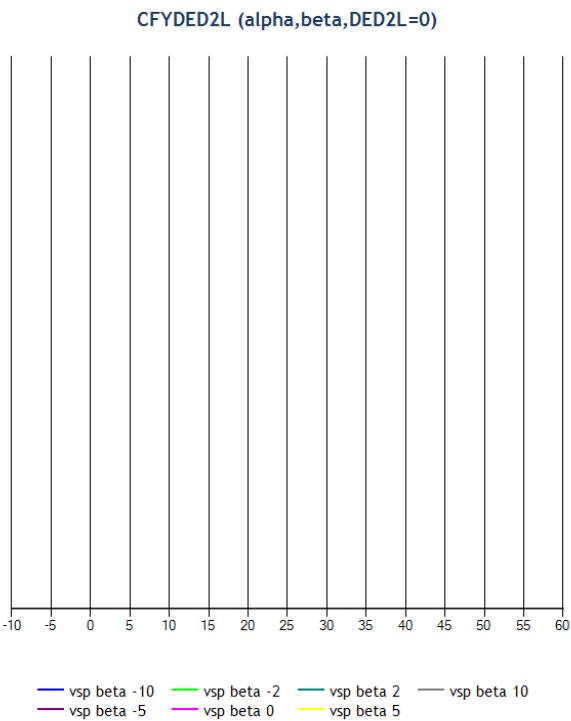
SIDE FORCE DUE TO ELEVON 2L DEFLECTION



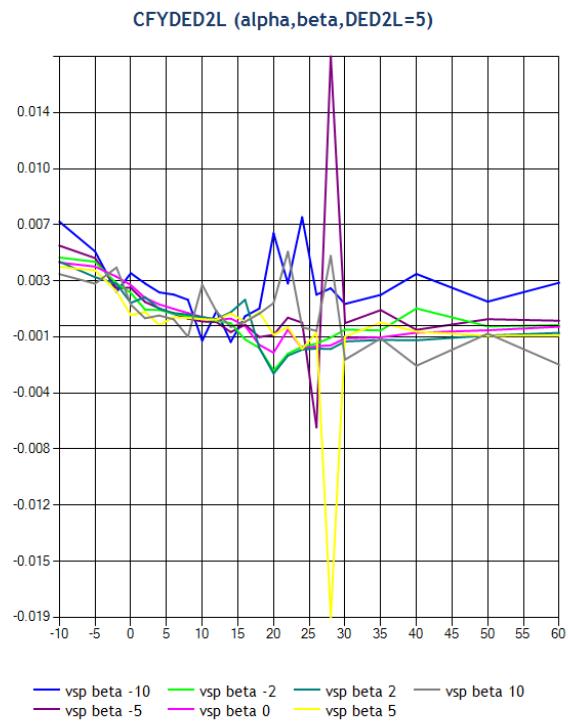
SIDE FORCE DUE TO ELEVON 2L DEFLECTION



SIDE FORCE DUE TO ELEVON 2L DEFLECTION

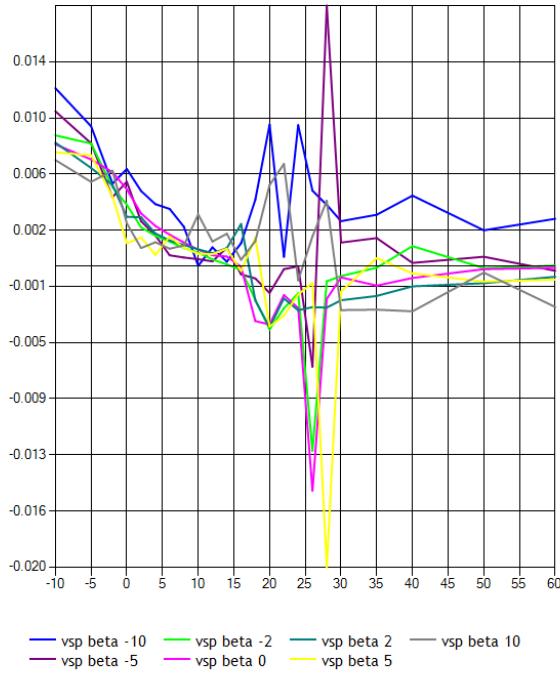


SIDE FORCE DUE TO ELEVON 2L DEFLECTION



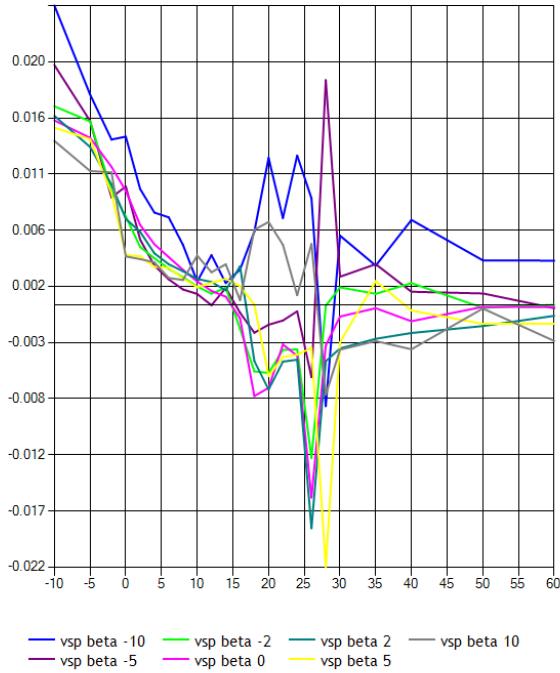
### SIDE FORCE DUE TO ELEVON 2L DEFLECTION

CFYDED2L (alpha,beta,DED2L=10)



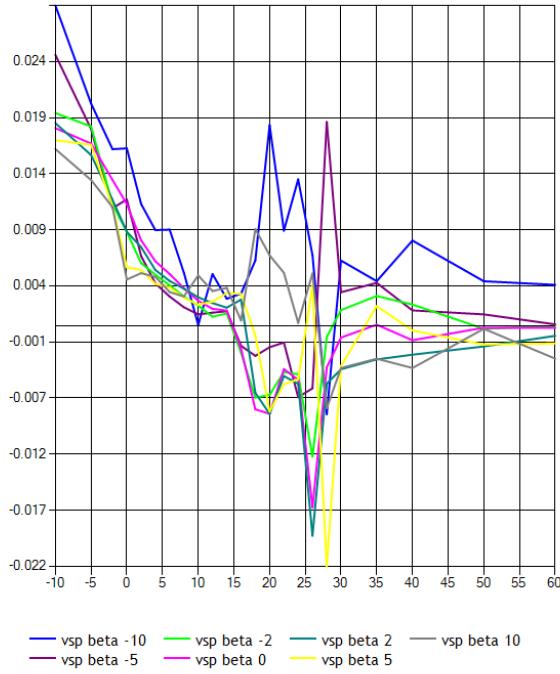
### SIDE FORCE DUE TO ELEVON 2L DEFLECTION

CFYDED2L (alpha,beta,DED2L=20)



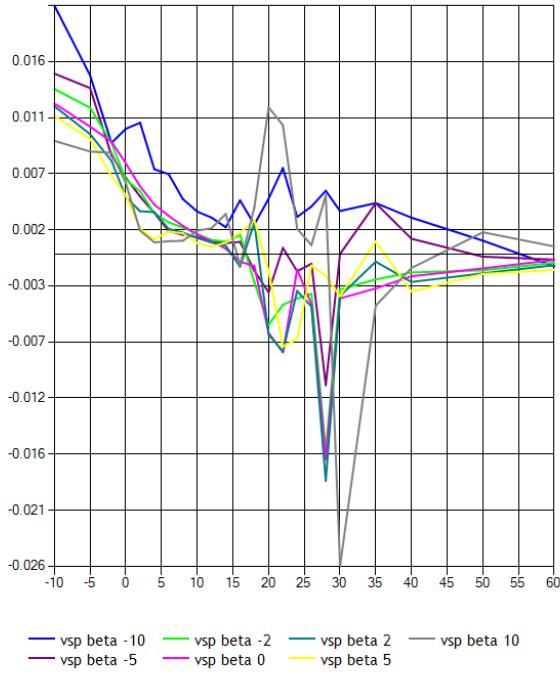
### SIDE FORCE DUE TO ELEVON 2L DEFLECTION

CFYDED2L (alpha,beta,DED2L=25)



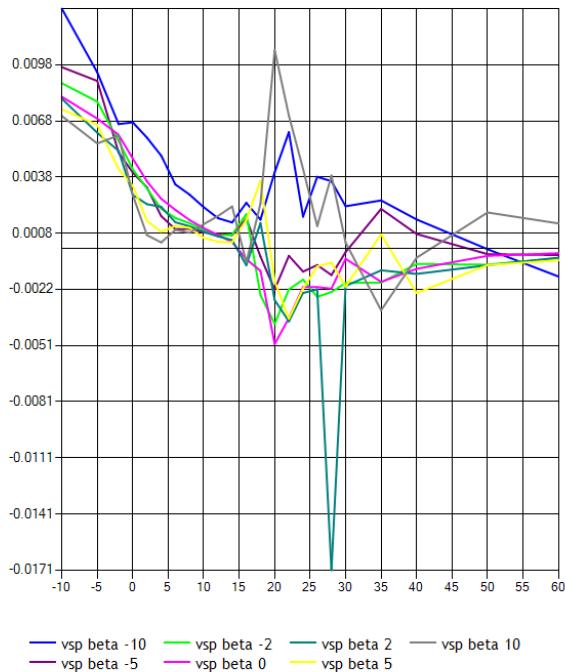
### SIDE FORCE DUE TO ELEVON 2R DEFLECTION

CFYDED2R (alpha,beta,DED2R=-16)



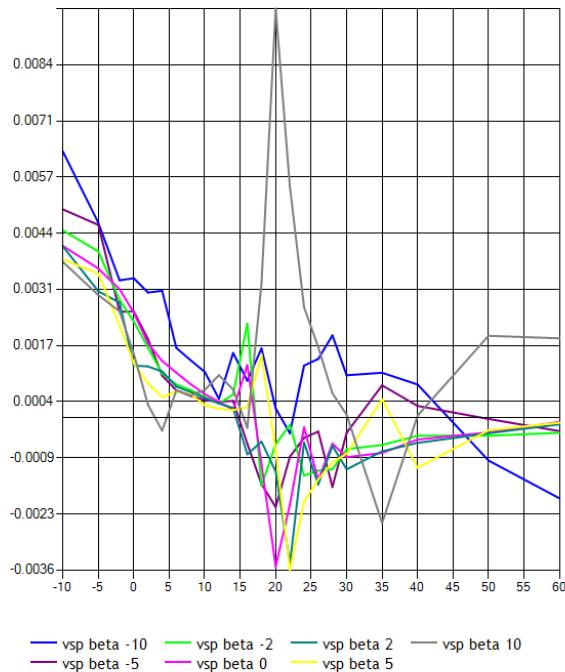
SIDE FORCE DUE TO ELEVON 2R DEFLECTION

CFYDED2R (alpha,beta,DED2R=-10)



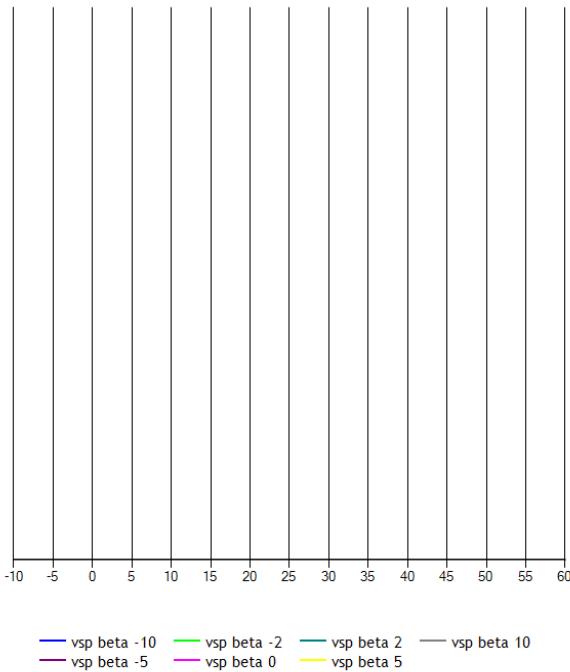
SIDE FORCE DUE TO ELEVON 2R DEFLECTION

CFYDED2R (alpha,beta,DED2R=-5)



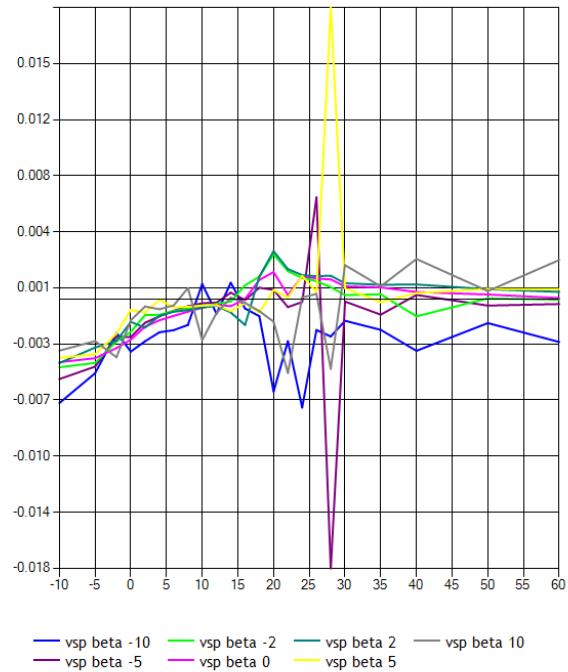
SIDE FORCE DUE TO ELEVON 2R DEFLECTION

CFYDED2R (alpha,beta,DED2R=0)



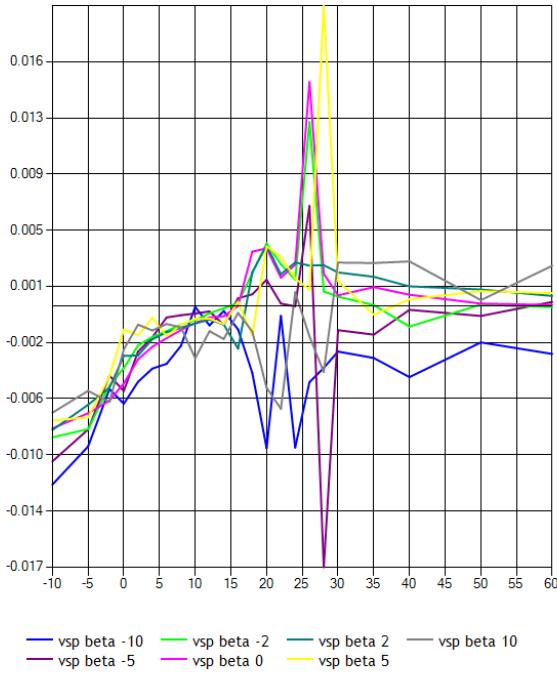
SIDE FORCE DUE TO ELEVON 2R DEFLECTION

CFYDED2R (alpha,beta,DED2R=5)



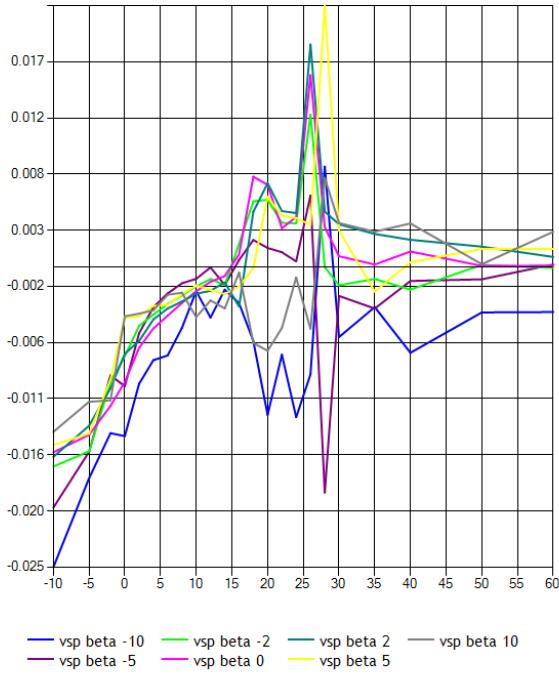
### SIDE FORCE DUE TO ELEVON 2R DEFLECTION

CFYDED2R (alpha,beta,DED2R=10)



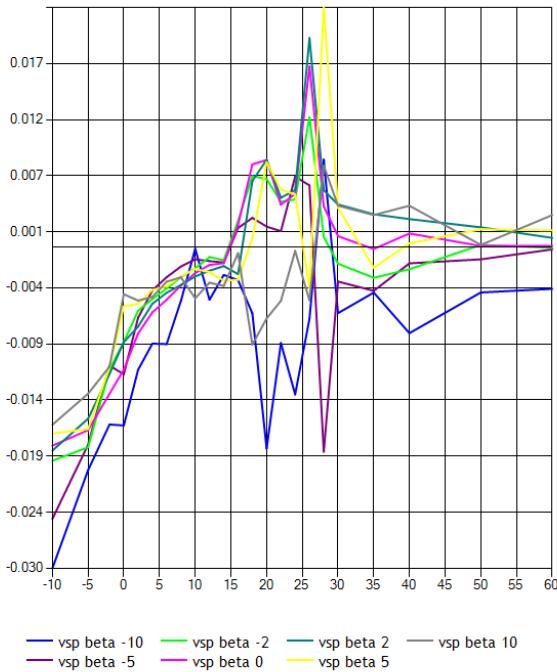
### SIDE FORCE DUE TO ELEVON 2R DEFLECTION

CFYDED2R (alpha,beta,DED2R=20)



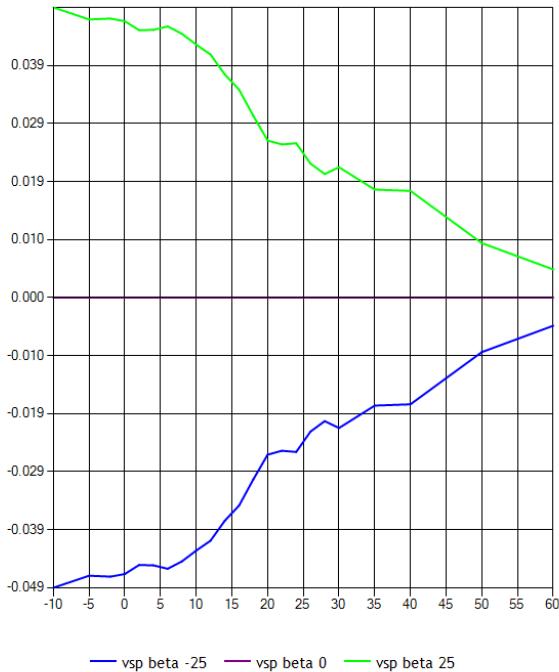
### SIDE FORCE DUE TO ELEVON 2R DEFLECTION

CFYDED2R (alpha,beta,DED2R=25)



### SIDE FORCE DUE TO RUDDER DEFLECTION

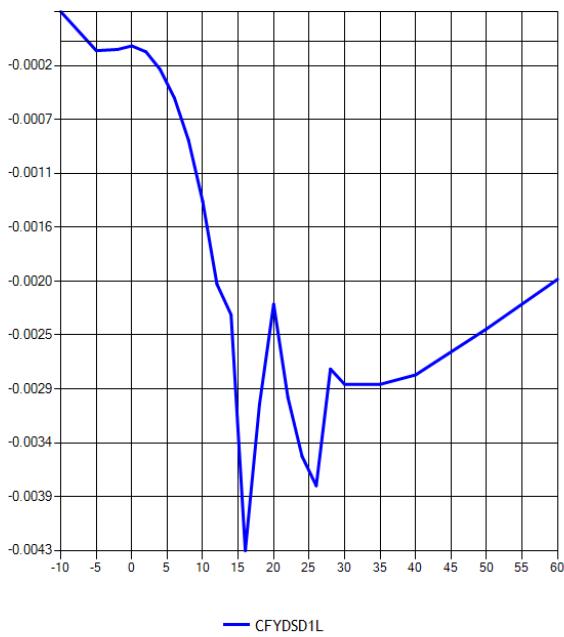
CFYDRD (alpha,beta,DRD=0)



### SIDE FORCE DUE TO LE SLAT 1L DEFLECTION

CFYDSD1L(alpha)

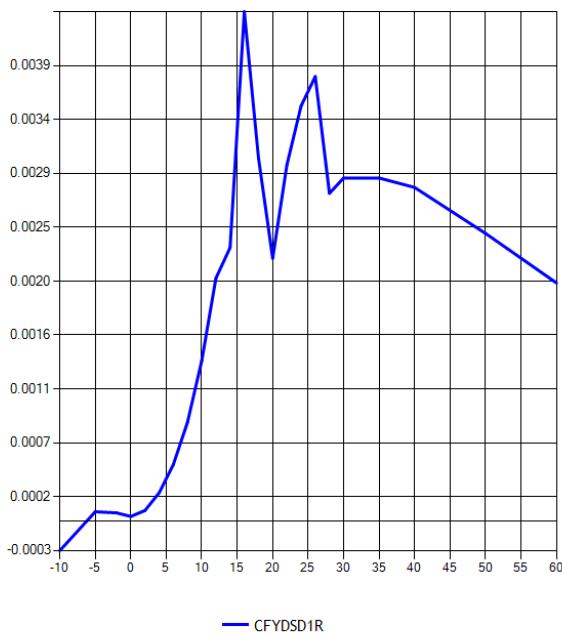
CFYDSD1L\*DSD1L



### SIDE FORCE DUE TO LE SLAT 1R DEFLECTION

CFYDSD1R(alpha)

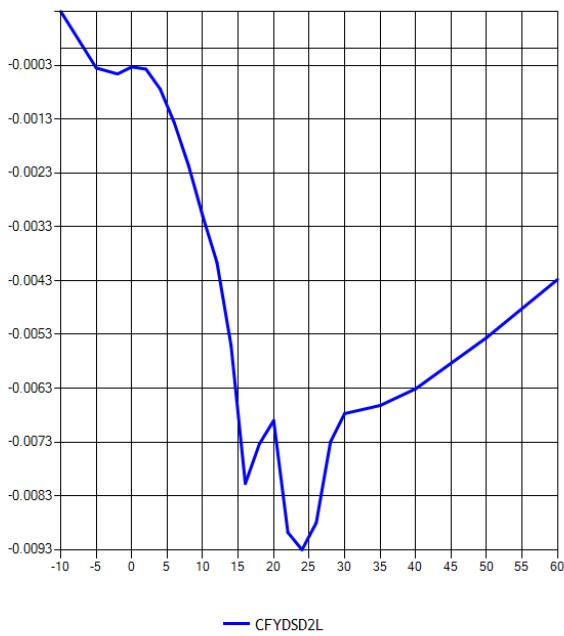
CFYDSD1R\*DSD1R



### SIDE FORCE DUE TO LE SLAT 2L DEFLECTION

CFYDSD2L(alpha)

CFYDSD2L\*DSD2L



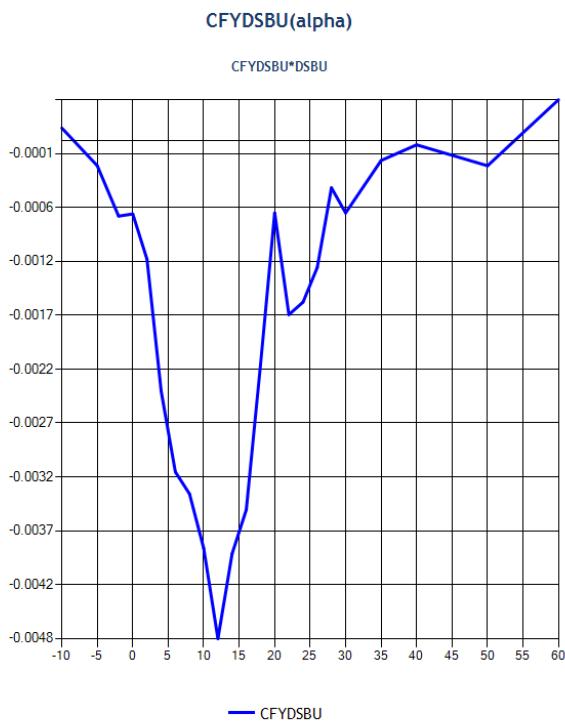
### SIDE FORCE DUE TO LE SLAT 2R DEFLECTION

CFYDSD2R(alpha)

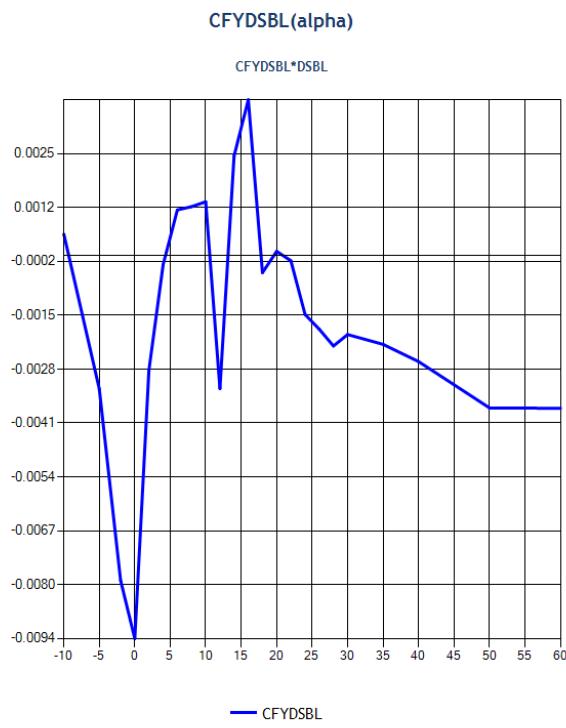
CFYDSD2R\*DSD2R



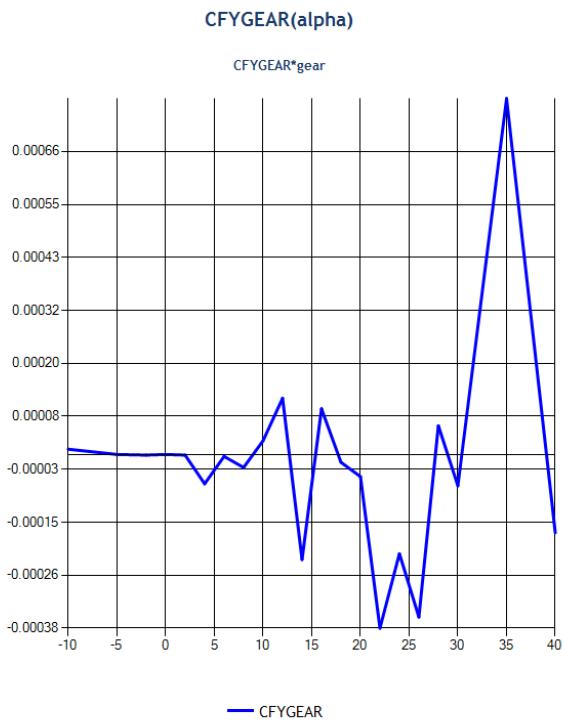
### SIDE FORCE DUE TO UPPER SPEEDBRAKE DEFLECTION



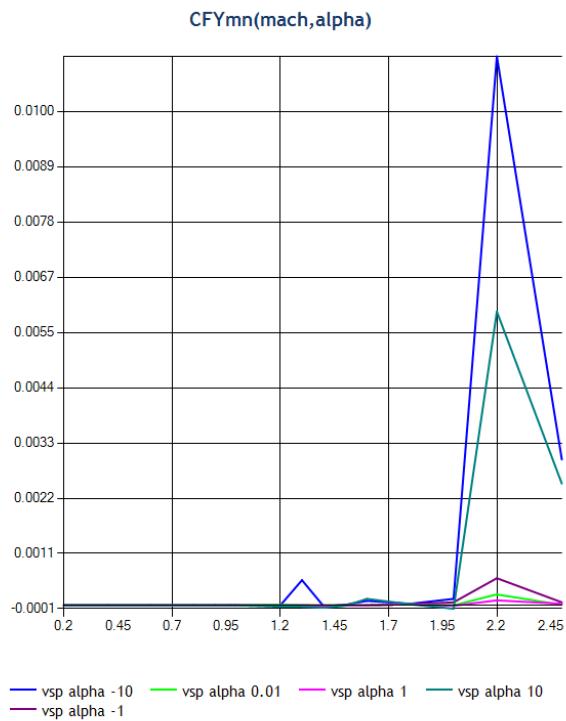
### SIDE FORCE DUE TO LOWER SPEEDBRAKE DEFLECTION



### SIDE FORCE INCREMENT DUE TO GEAR

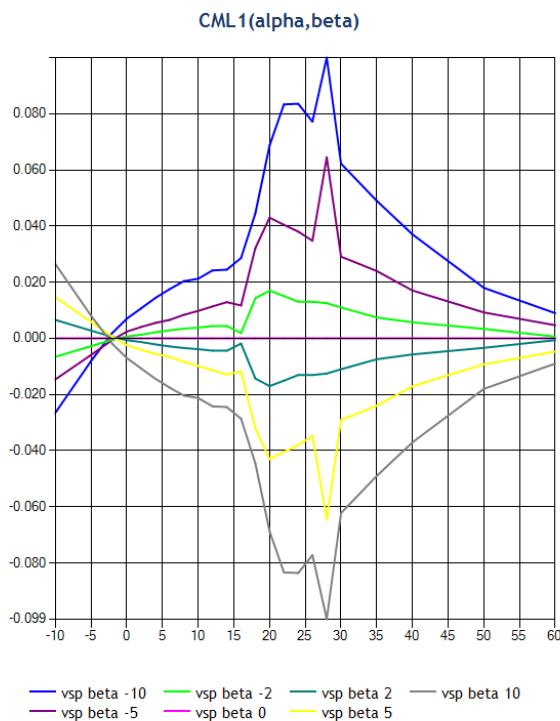


### SIDE FORCE DUE TO MACH



ROLL

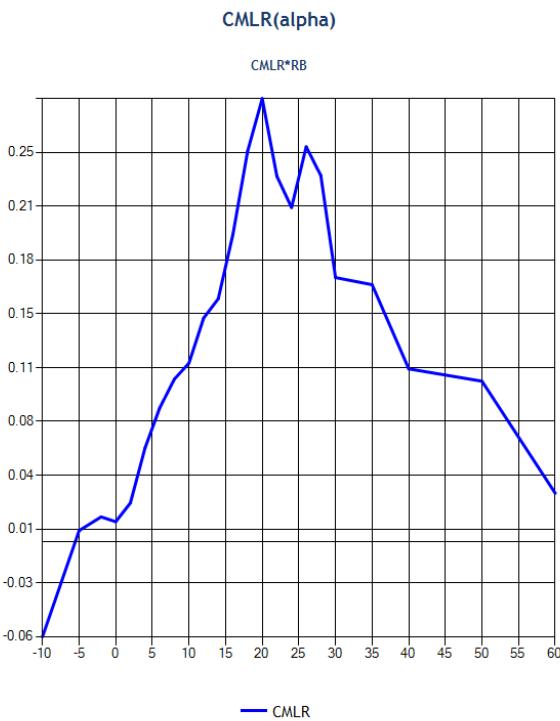
### BASIC ROLLING MOMENT



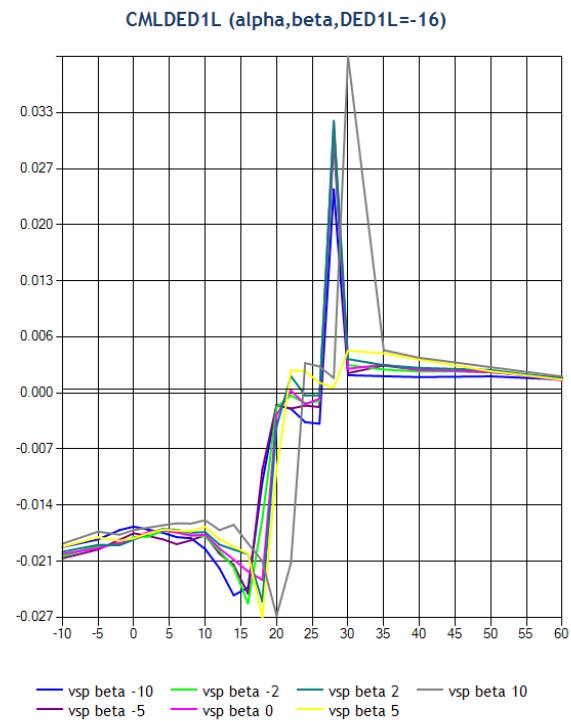
### ROLL DAMPING DERIVATIVE



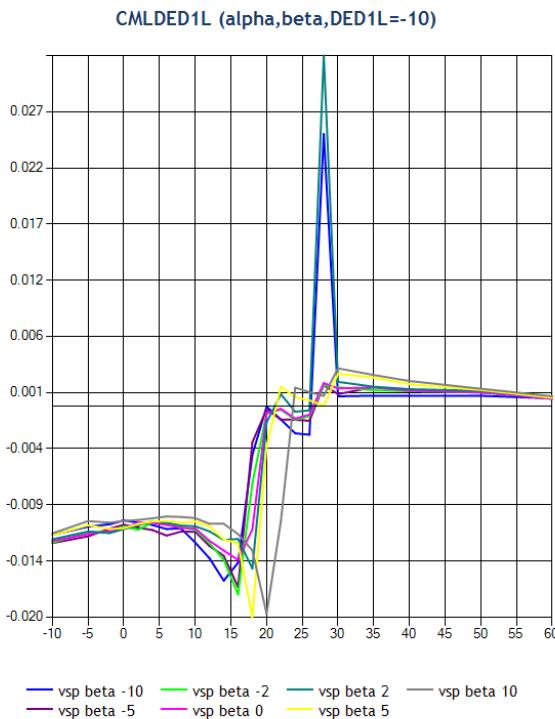
### ROLLING MOMENT DUE TO YAW RATE



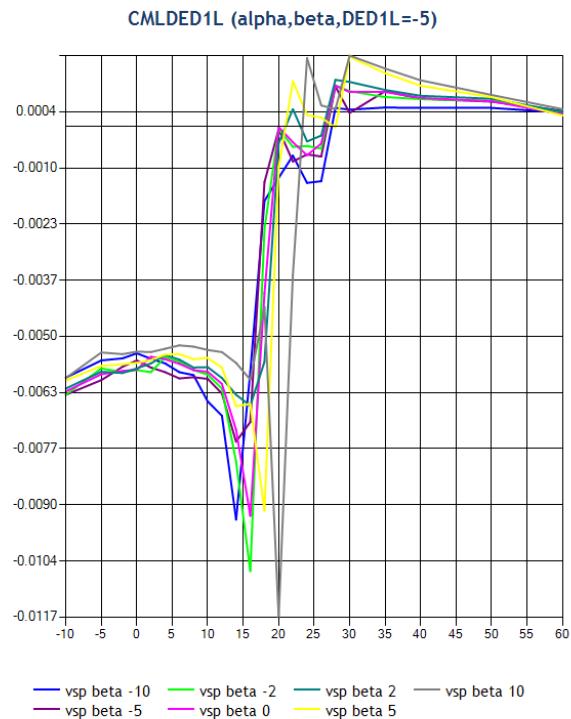
### ROLLING MOMENT DUE TO ELEVON 1L DEFLECTION



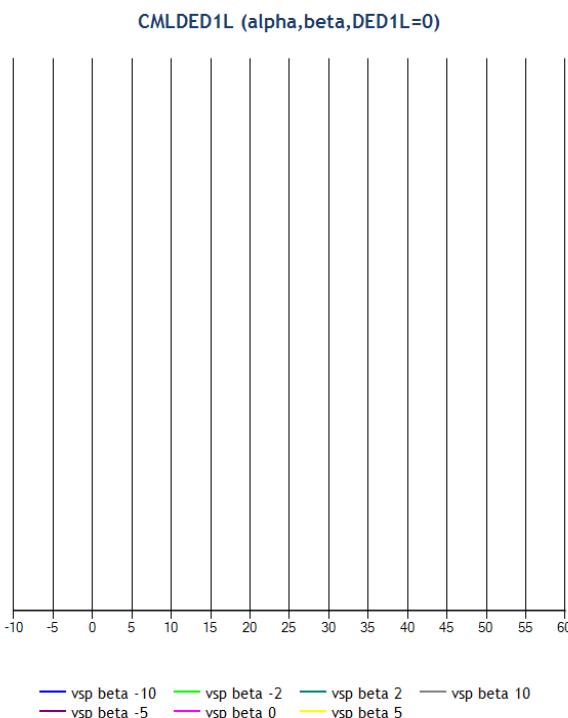
ROLLING MOMENT DUE TO ELEVON 1L DEFLECTION



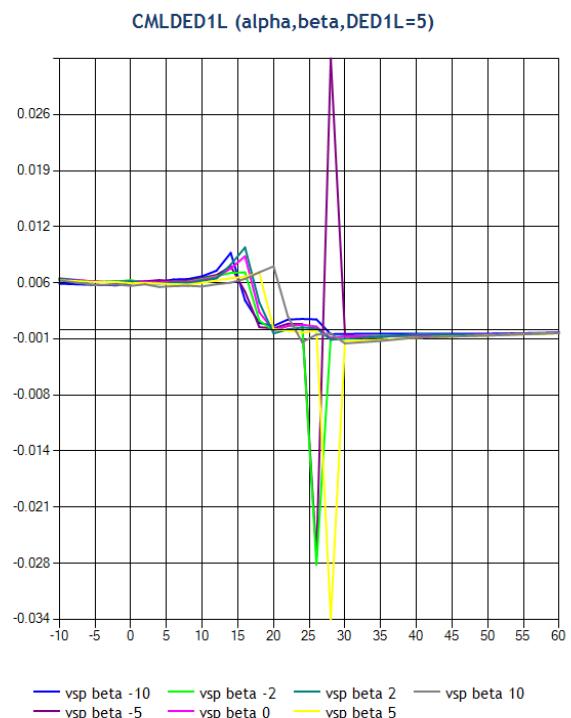
ROLLING MOMENT DUE TO ELEVON 1L DEFLECTION



ROLLING MOMENT DUE TO ELEVON 1L DEFLECTION

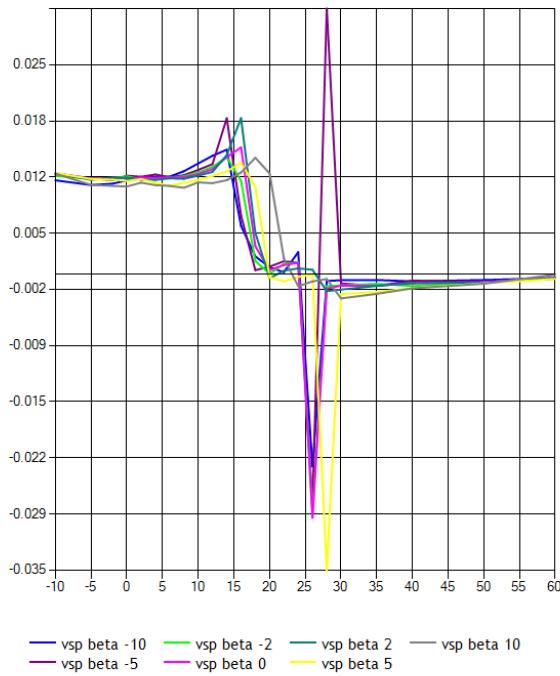


ROLLING MOMENT DUE TO ELEVON 1L DEFLECTION



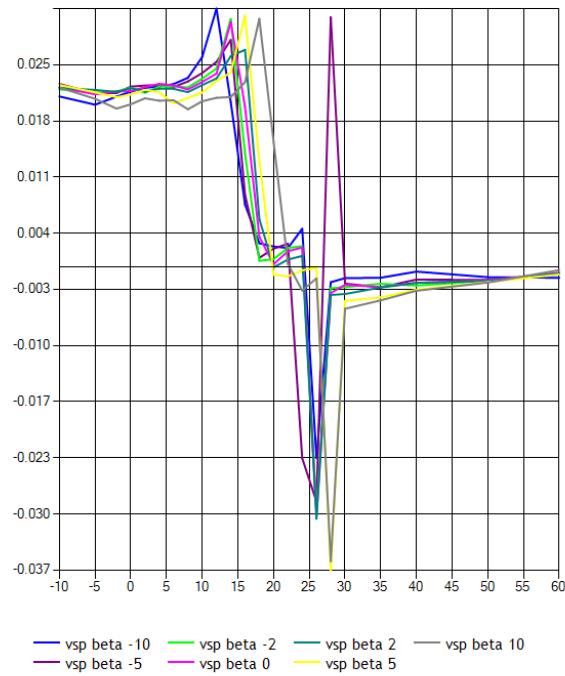
### ROLLING MOMENT DUE TO ELEVON 1L DEFLECTION

CMLDED1L (alpha,beta,DED1L=10)



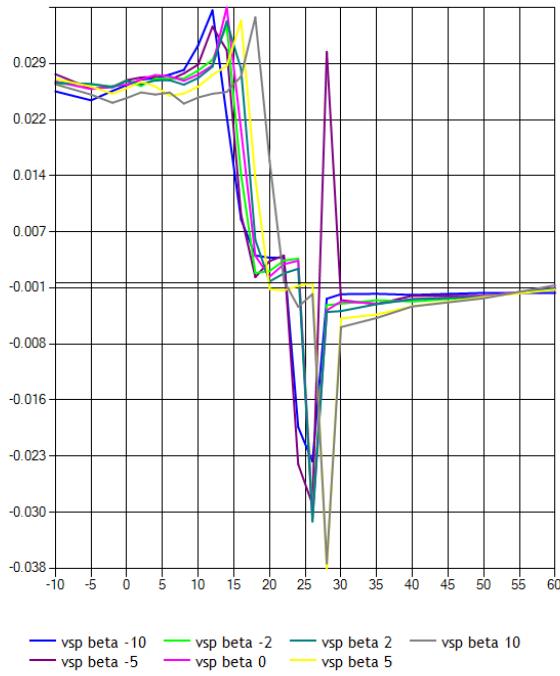
### ROLLING MOMENT DUE TO ELEVON 1L DEFLECTION

CMLDED1L (alpha,beta,DED1L=20)



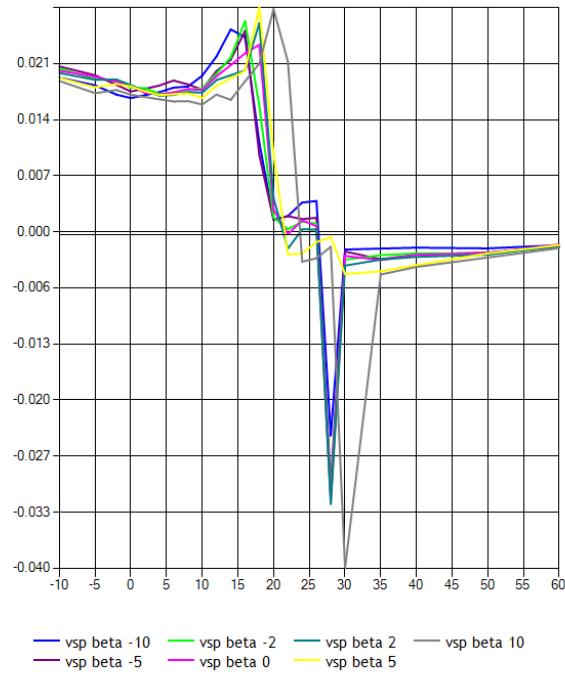
### ROLLING MOMENT DUE TO ELEVON 1L DEFLECTION

CMLDED1L (alpha,beta,DED1L=25)



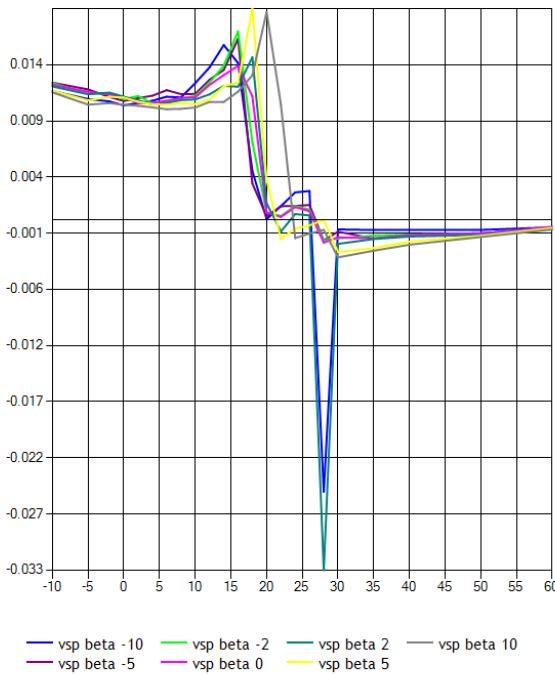
### ROLLING MOMENT DUE TO ELEVON 1R DEFLECTION

CMLDED1R (alpha,beta,DED1R=-16)



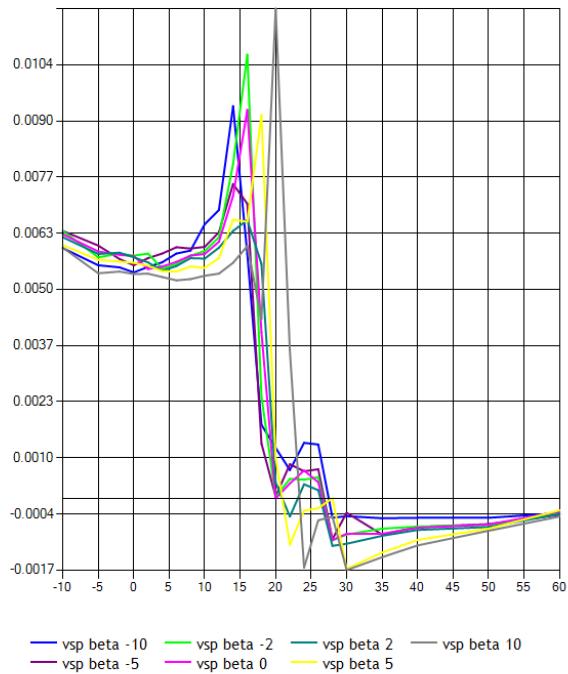
ROLLING MOMENT DUE TO ELEVON 1R DEFLECTION

CMLDED1R (alpha,beta,DED1R=-10)



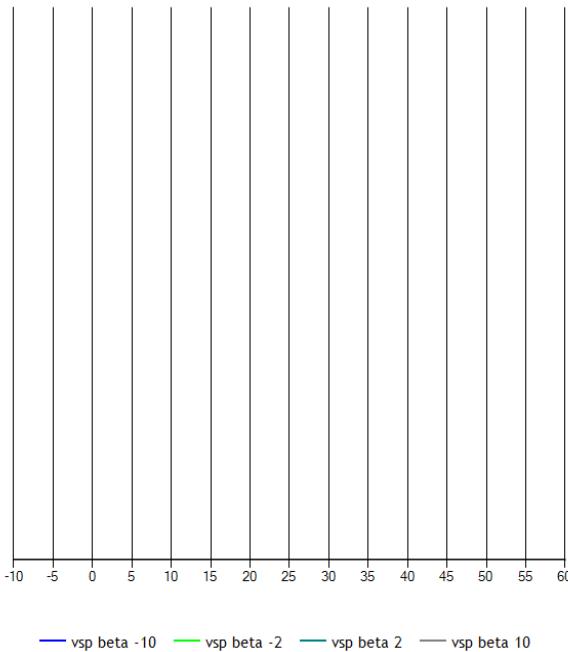
ROLLING MOMENT DUE TO ELEVON 1R DEFLECTION

CMLDED1R (alpha,beta,DED1R=-5)



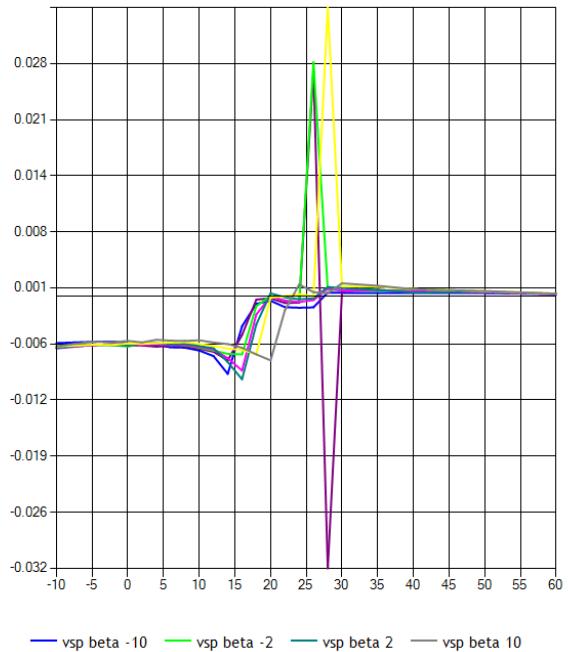
ROLLING MOMENT DUE TO ELEVON 1R DEFLECTION

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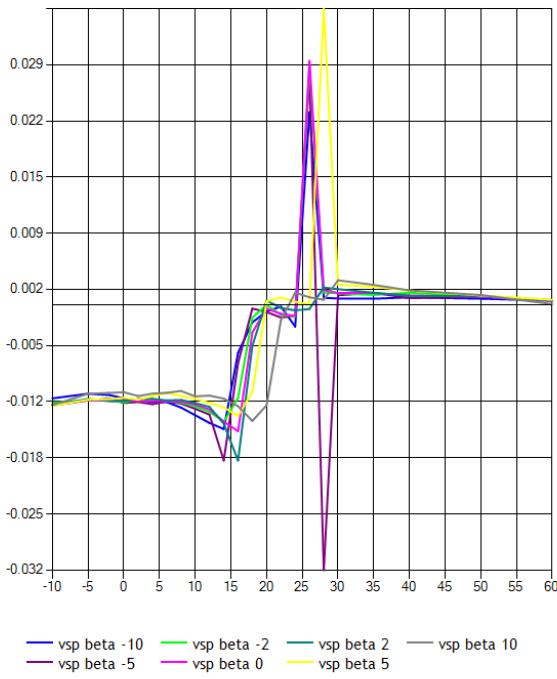
ROLLING MOMENT DUE TO ELEVON 1R DEFLECTION

CMLDED1R (alpha,beta,DED1R=5)



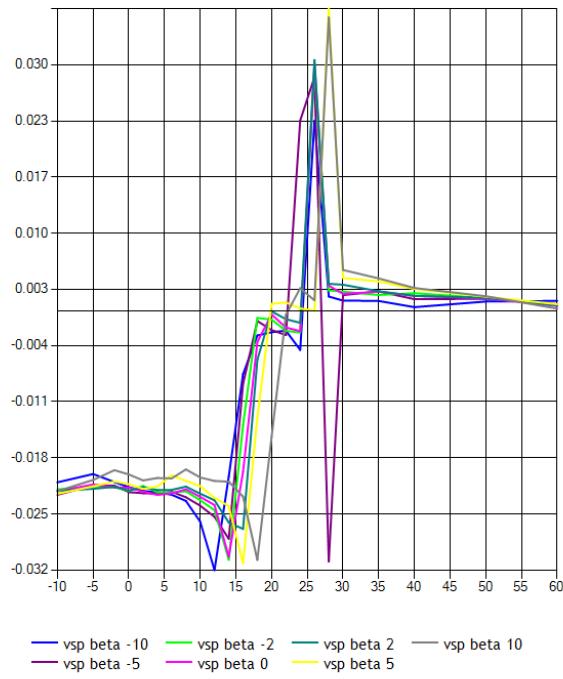
### ROLLING MOMENT DUE TO ELEVON 1R DEFLECTION

CMLDED1R (alpha,beta,DED1R=10)



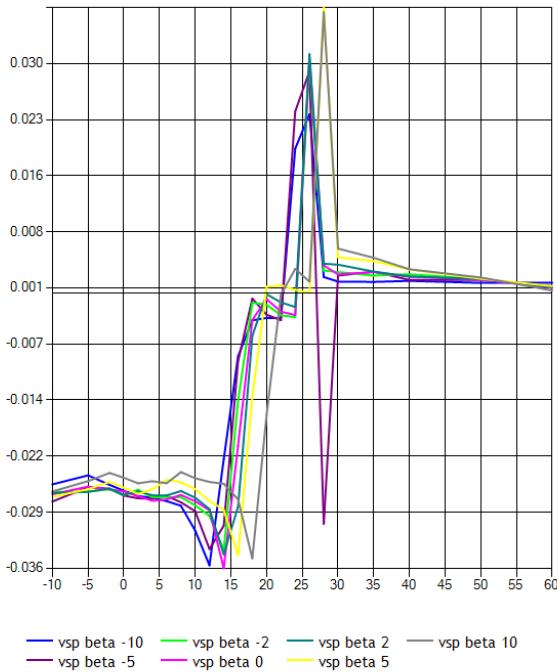
### ROLLING MOMENT DUE TO ELEVON 1R DEFLECTION

CMLDED1R (alpha,beta,DED1R=20)



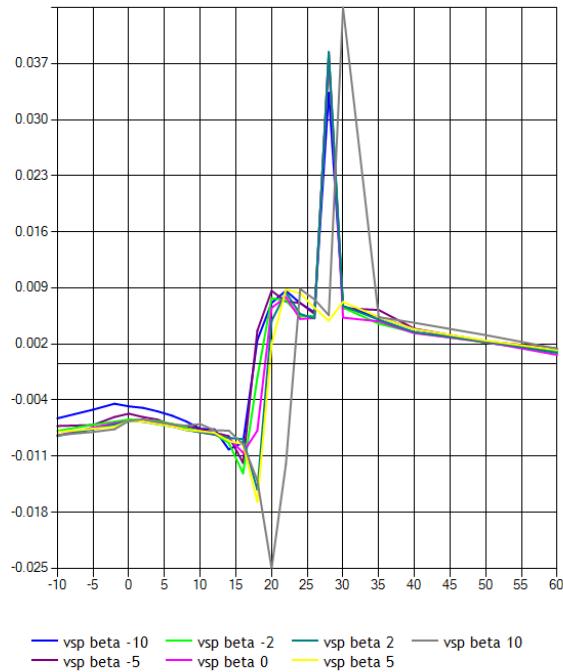
### ROLLING MOMENT DUE TO ELEVON 1R DEFLECTION

CMLDED1R (alpha,beta,DED1R=25)



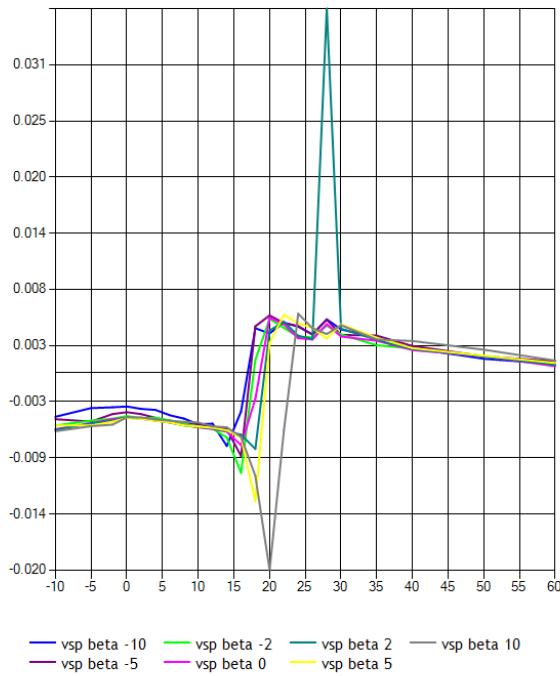
### ROLLING MOMENT DUE TO ELEVON 2L DEFLECTION

CMLDED2L (alpha,beta,DED2L=-16)



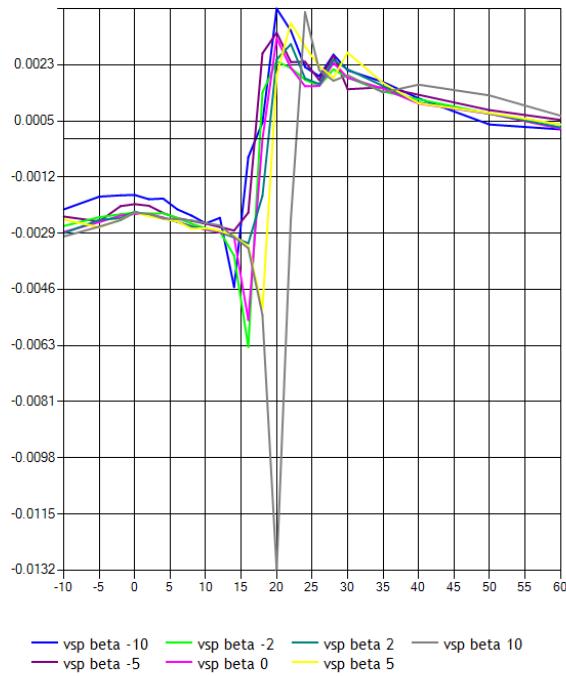
### ROLLING MOMENT DUE TO ELEVON 2L DEFLECTION

CMLDED2L (alpha,beta,DED2L=-10)



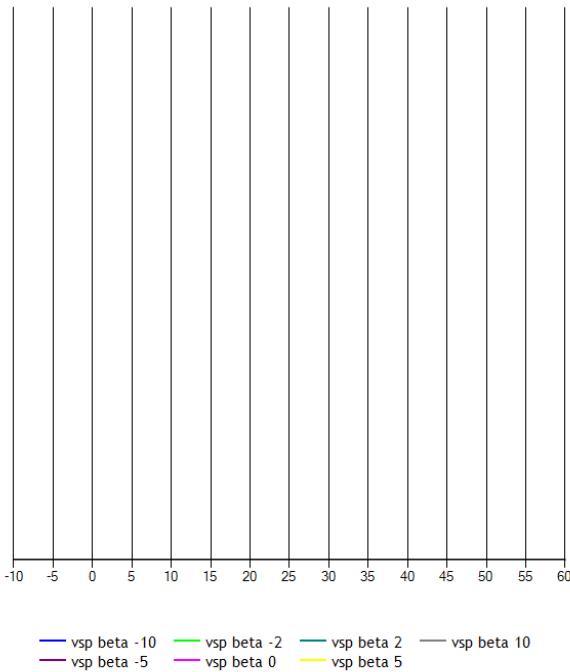
### ROLLING MOMENT DUE TO ELEVON 2L DEFLECTION

CMLDED2L (alpha,beta,DED2L=-5)



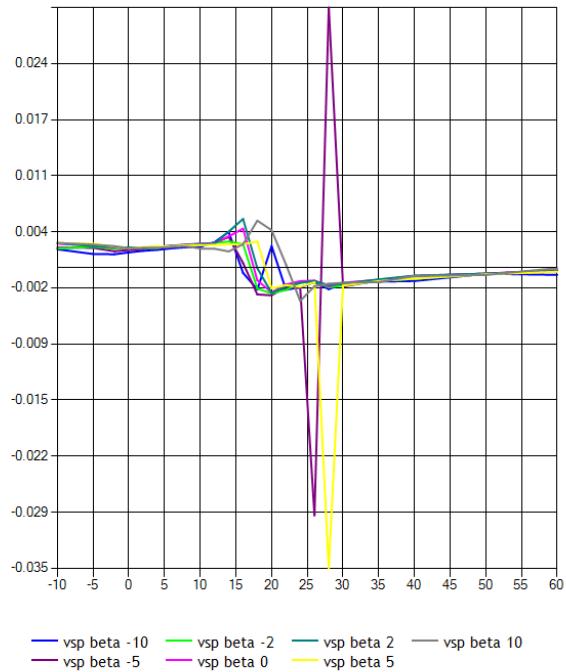
### ROLLING MOMENT DUE TO ELEVON 2L DEFLECTION

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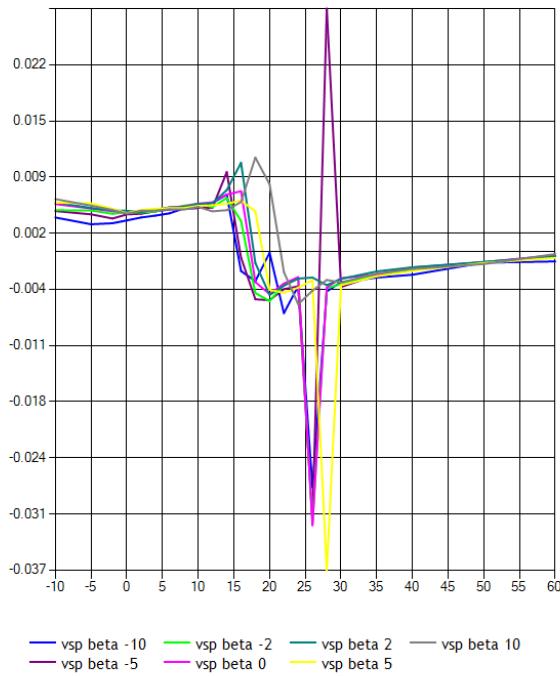
### ROLLING MOMENT DUE TO ELEVON 2L DEFLECTION

CMLDED2L (alpha,beta,DED2L=5)



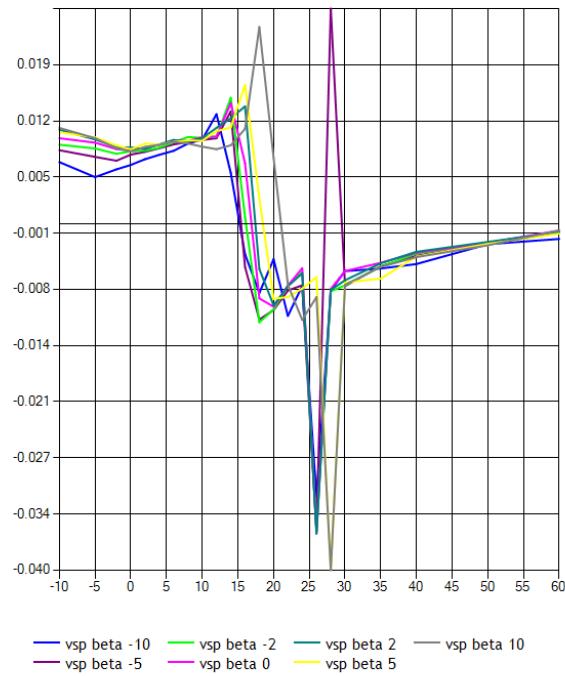
### ROLLING MOMENT DUE TO ELEVON 2L DEFLECTION

CMLDED2L (alpha,beta,DED2L=10)



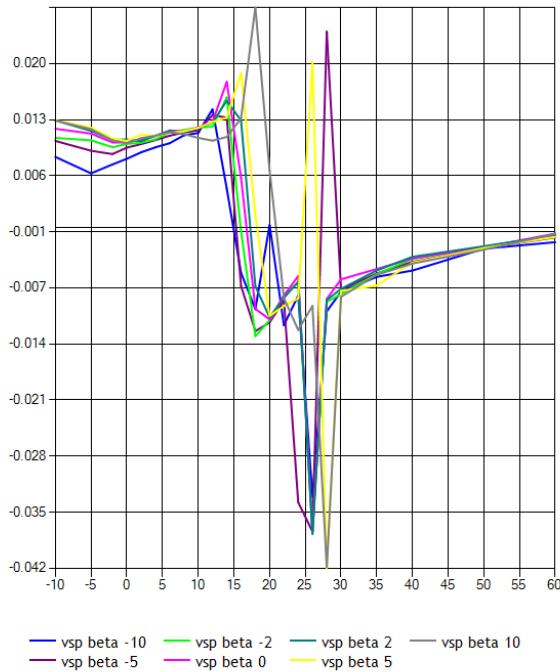
### ROLLING MOMENT DUE TO ELEVON 2L DEFLECTION

CMLDED2L (alpha,beta,DED2L=20)



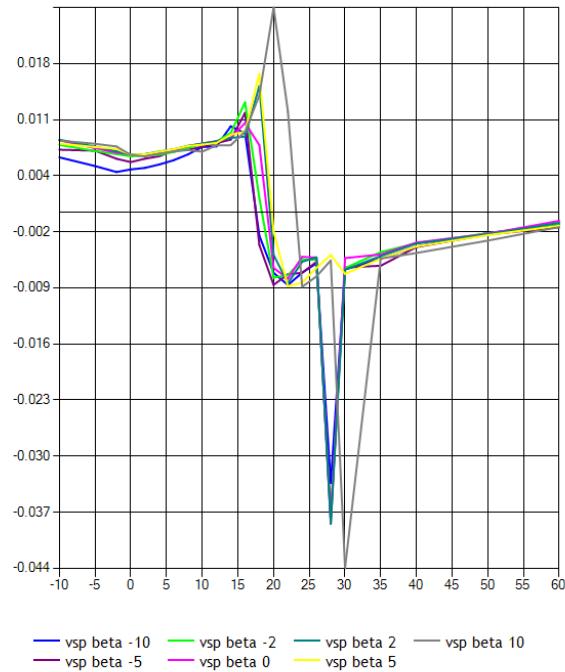
### ROLLING MOMENT DUE TO ELEVON 2L DEFLECTION

CMLDED2L (alpha,beta,DED2L=25)



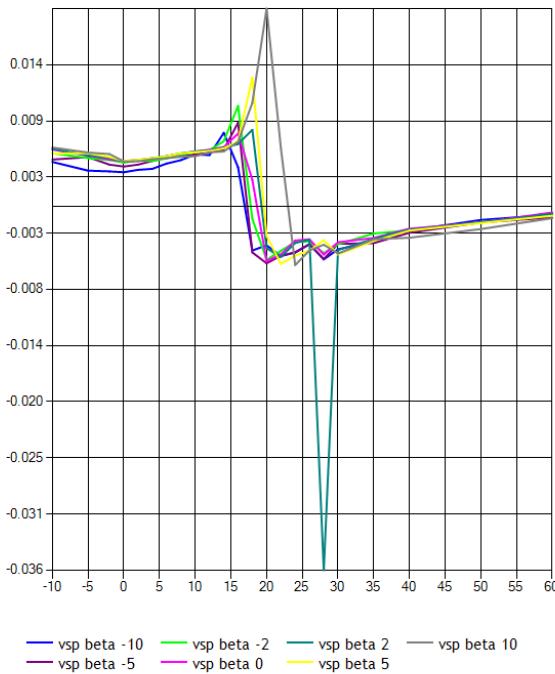
### ROLLING MOMENT DUE TO ELEVON 2R DEFLECTION

CMLDED2R (alpha,beta,DED2R=-16)



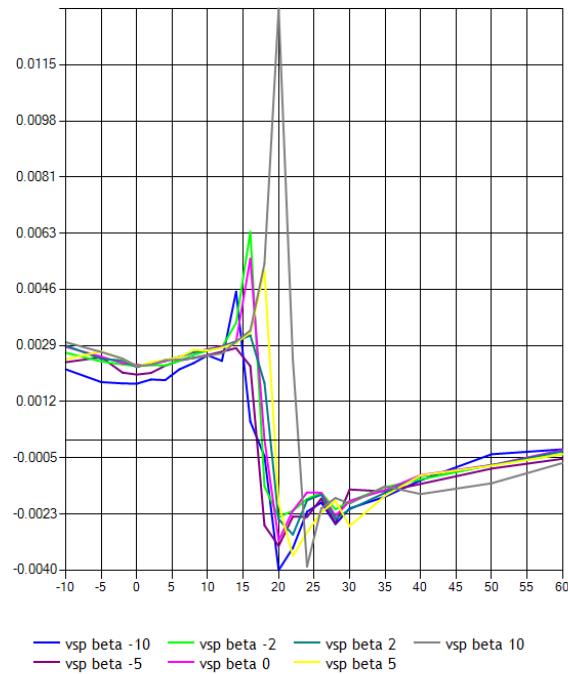
ROLLING MOMENT DUE TO ELEVON 2R DEFLECTION

CMLDED2R (alpha,beta,DED2R=-10)



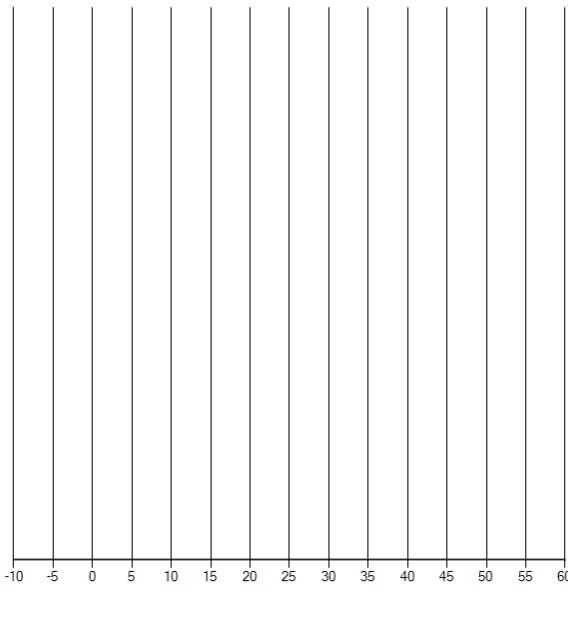
ROLLING MOMENT DUE TO ELEVON 2R DEFLECTION

CMLDED2R (alpha,beta,DED2R=-5)



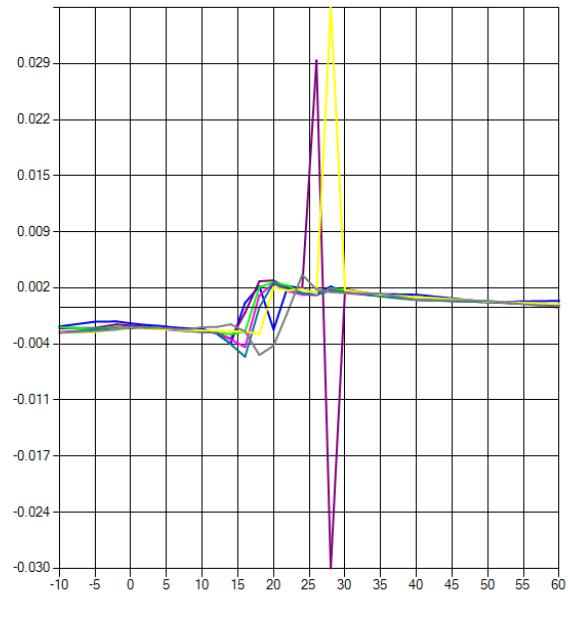
ROLLING MOMENT DUE TO ELEVON 2R DEFLECTION

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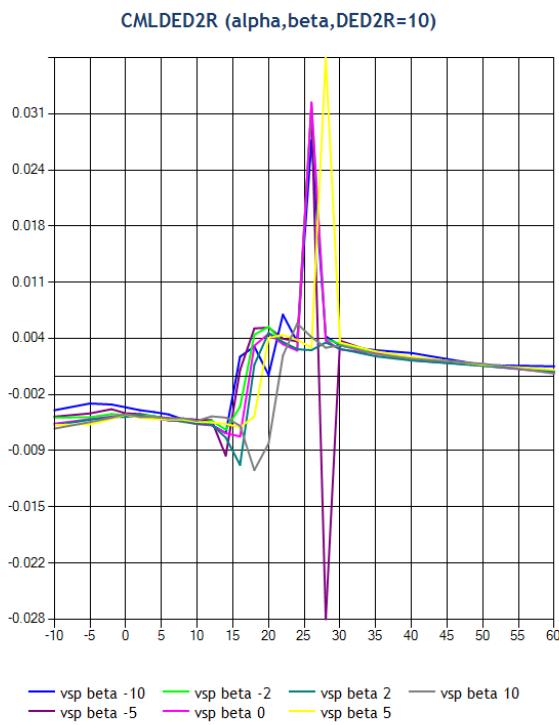


ROLLING MOMENT DUE TO ELEVON 2R DEFLECTION

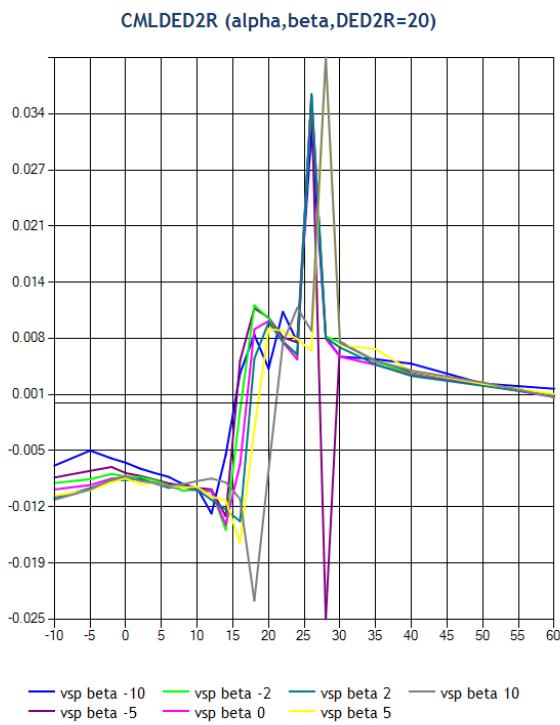
CMLDED2R (alpha,beta,DED2R=5)



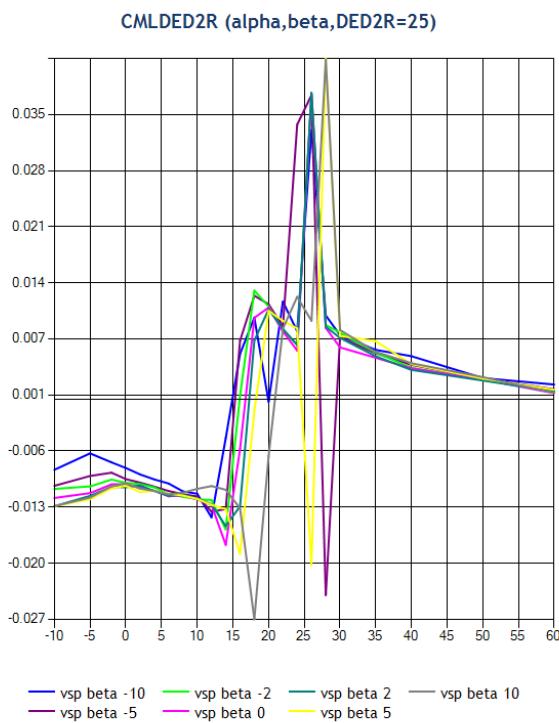
## ROLLING MOMENT DUE TO ELEVON 2R DEFLECTION



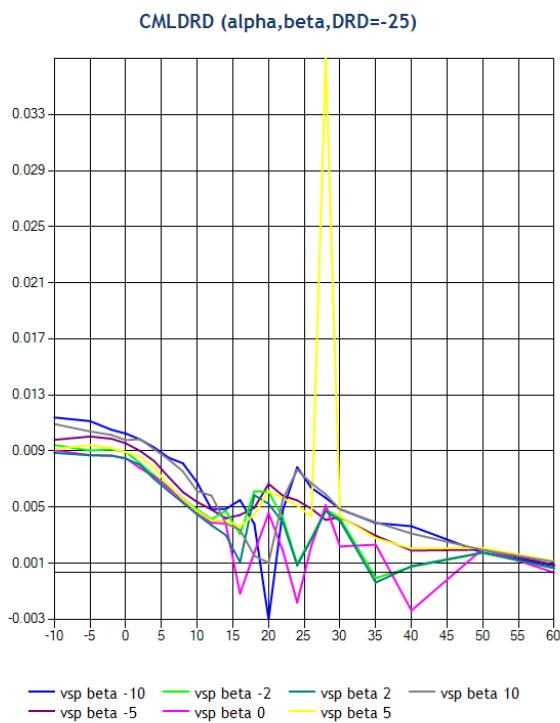
## ROLLING MOMENT DUE TO ELEVON 2R DEFLECTION



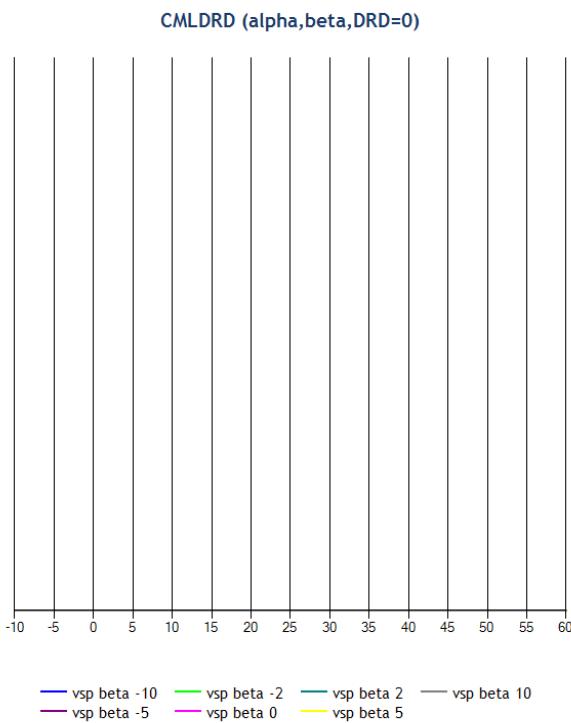
## ROLLING MOMENT DUE TO ELEVON 2R DEFLECTION



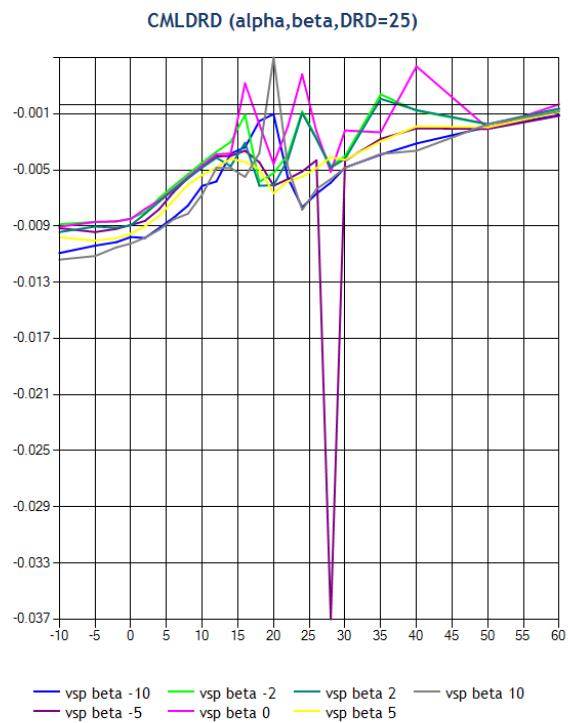
## ROLLING MOMENT DUE TO RUDDER DEFLECTION



### ROLLING MOMENT DUE TO RUDDER DEFLECTION



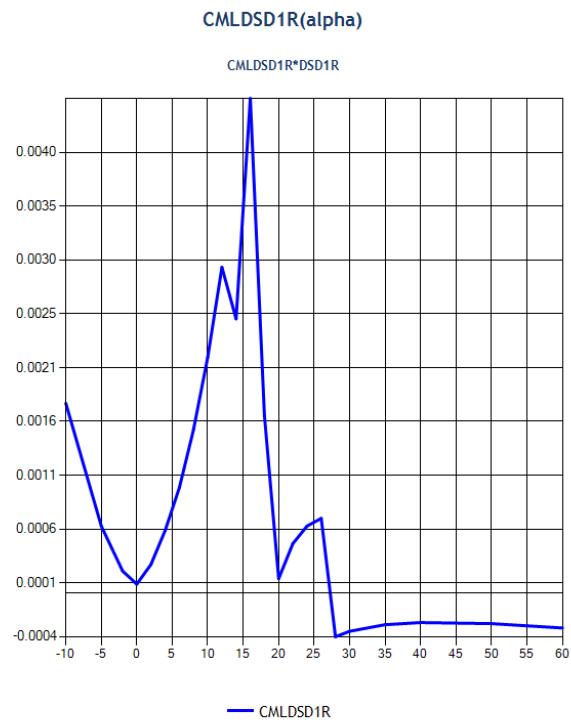
### ROLLING MOMENT DUE TO RUDDER DEFLECTION



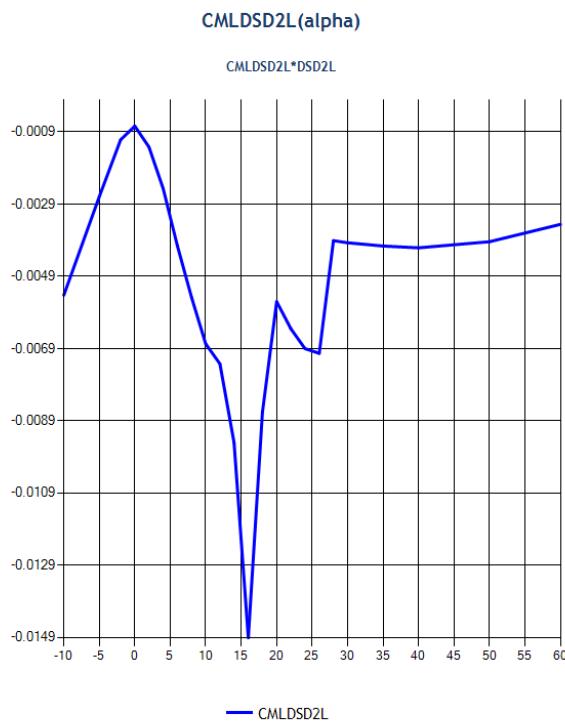
### ROLLING MOMENT DUE TO LE SLAT 1L DEFLECTION



### ROLLING MOMENT DUE TO LE SLAT 1R DEFLECTION



#### ROLLING MOMENT DUE TO LE SLAT 2L DEFLECTION



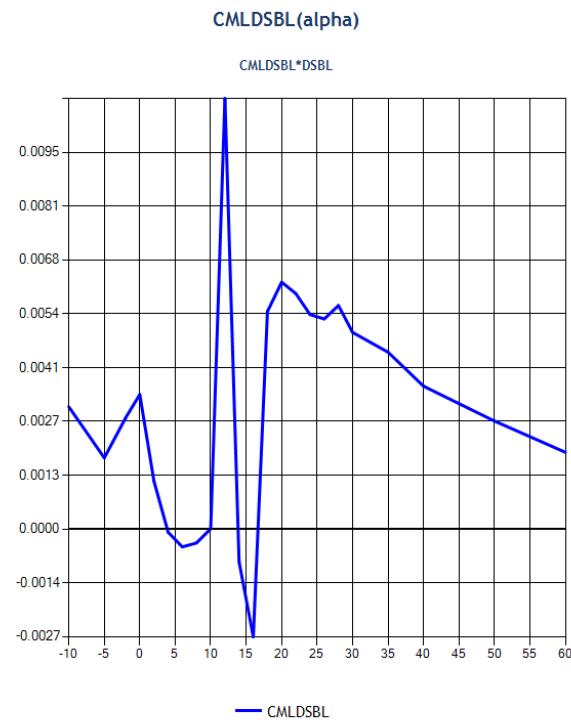
#### ROLLING MOMENT DUE TO LE SLAT 2R DEFLECTION



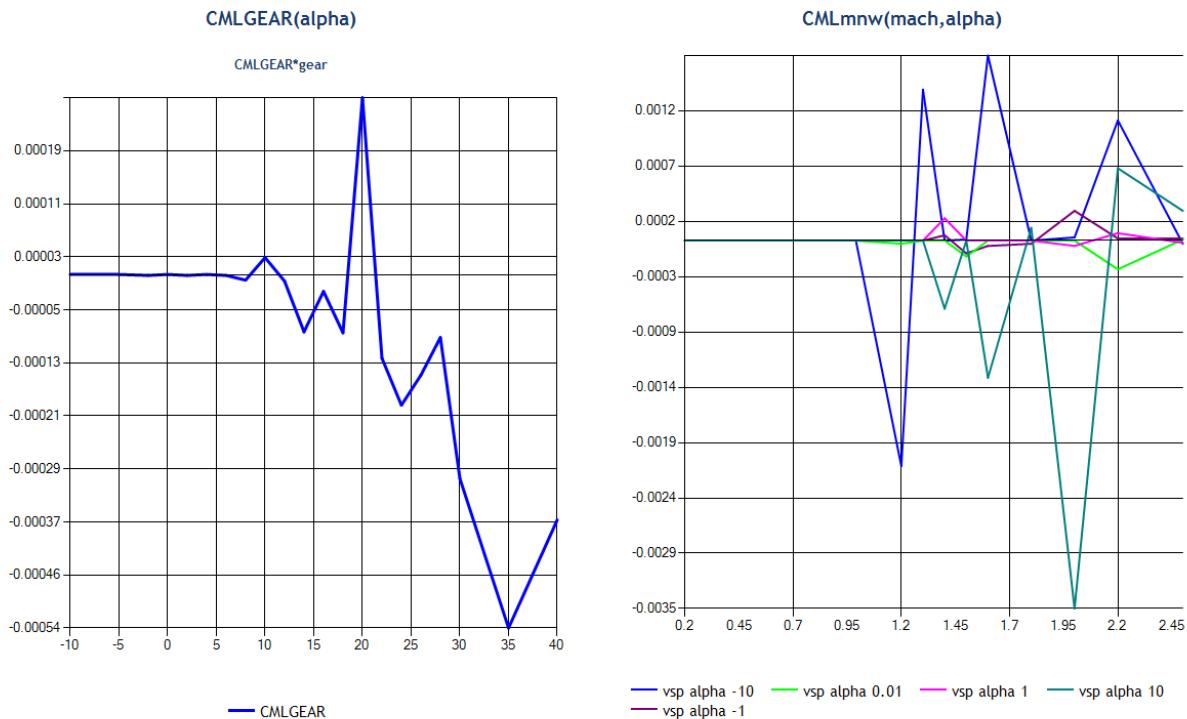
#### ROLLING MOMENT DUE TO UPPER SPEEDBRAKE DEFLECTION



#### ROLLING MOMENT DUE TO LOWER SPEEDBRAKE DEFLECTION

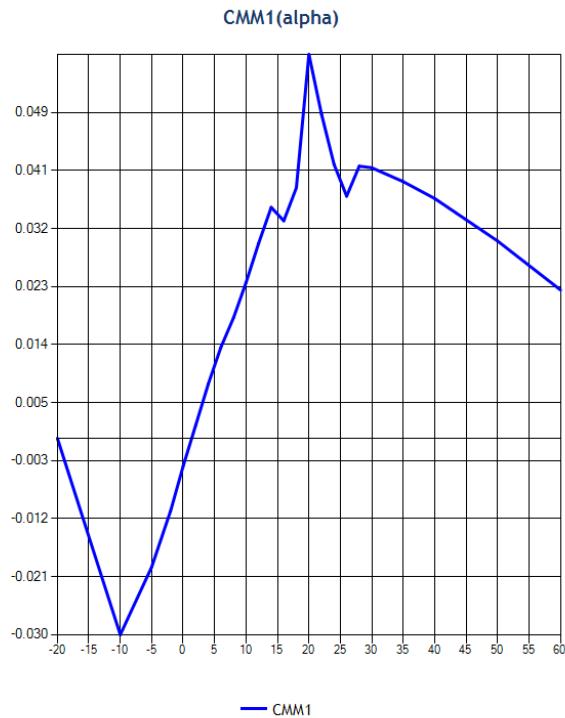


### ROLLING MOMENT INCREMENT DUE TO GEAR

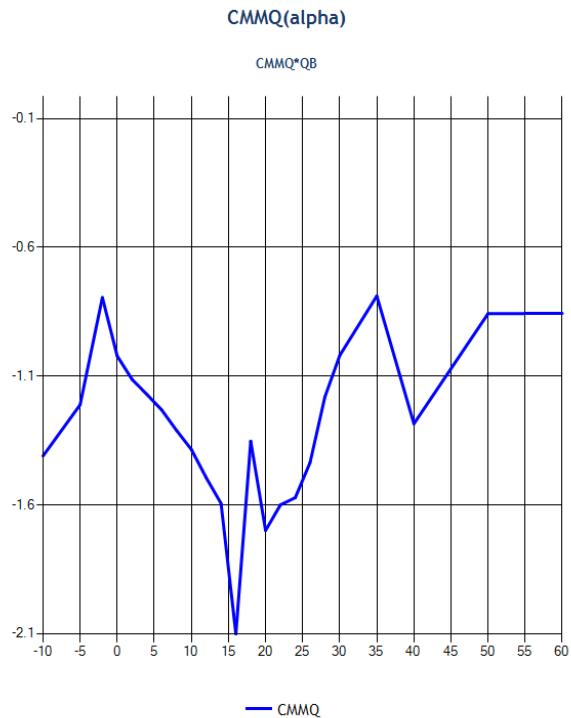


## PITCH

### BASIC PITCHING MOMENT

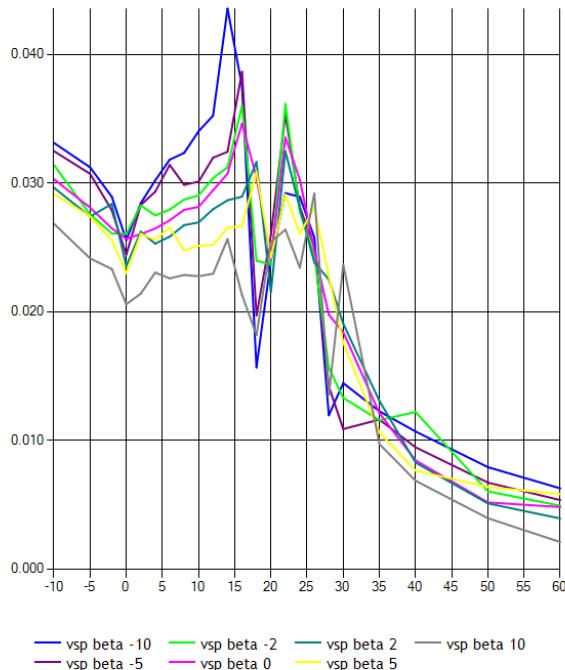


### PITCH DAMPING DERIVATIVE



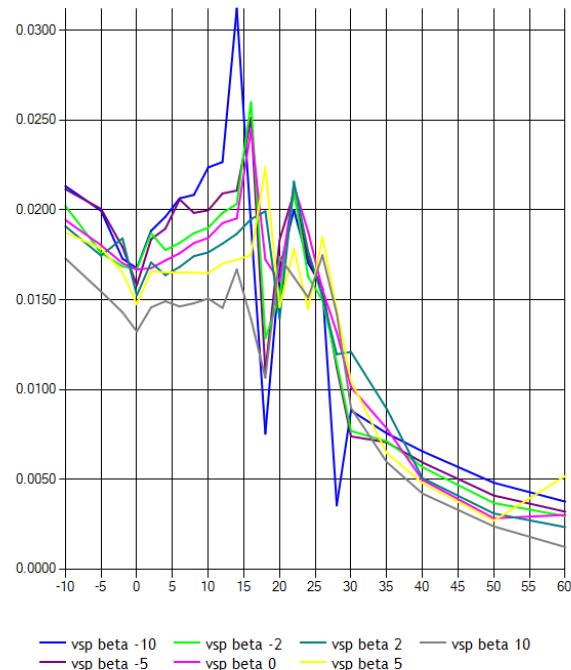
### PITCH MOMENT DUE TO ELEVON 1L

CMMDED1L (alpha,beta,DED1L=-16)



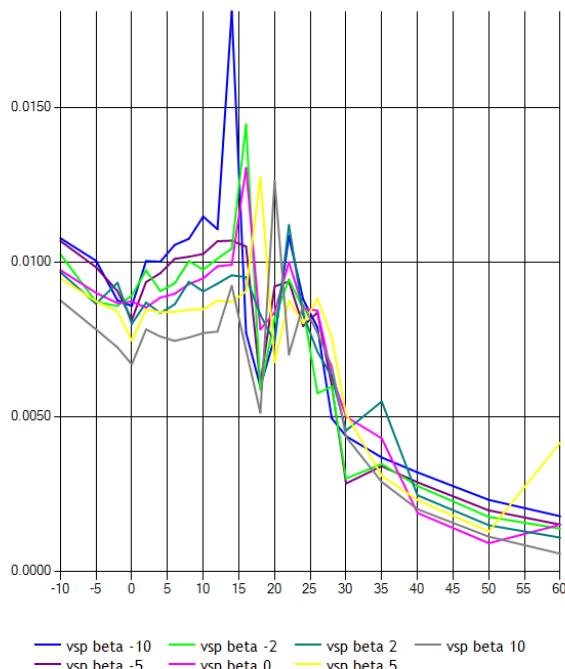
### PITCH MOMENT DUE TO ELEVON 1L

CMMDED1L (alpha,beta,DED1L=-10)



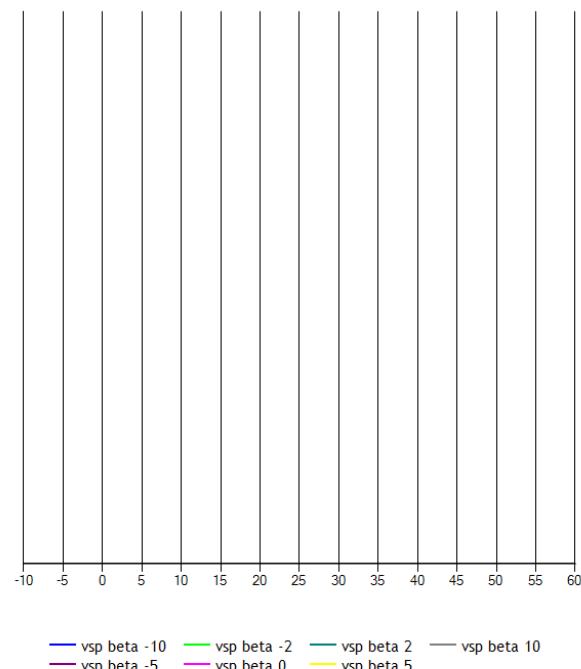
### PITCH MOMENT DUE TO ELEVON 1L

CMMDED1L (alpha,beta,DED1L=-5)



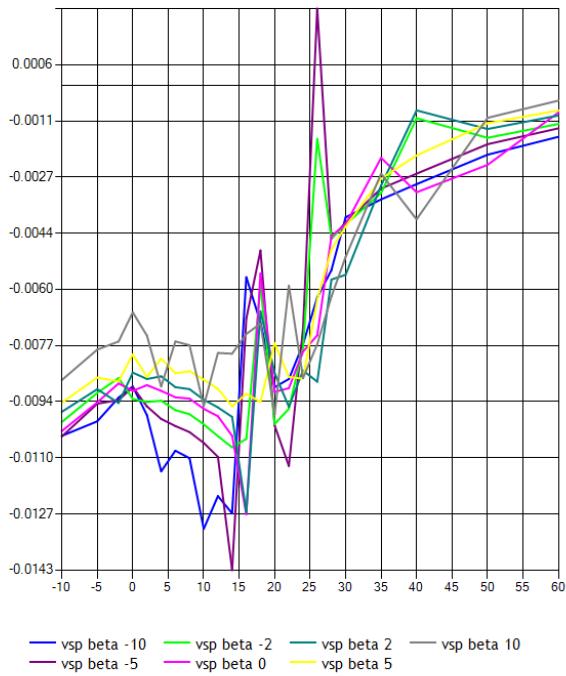
### PITCH MOMENT DUE TO ELEVON 1L

CMMDED1L (alpha,beta,DED1L=0)



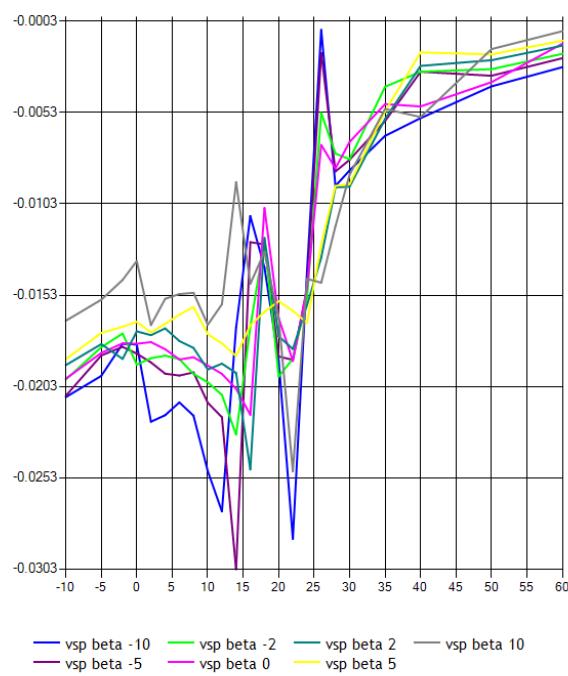
### PITCH MOMENT DUE TO ELEVON 1L

CMMDED1L (alpha,beta,DED1L=5)



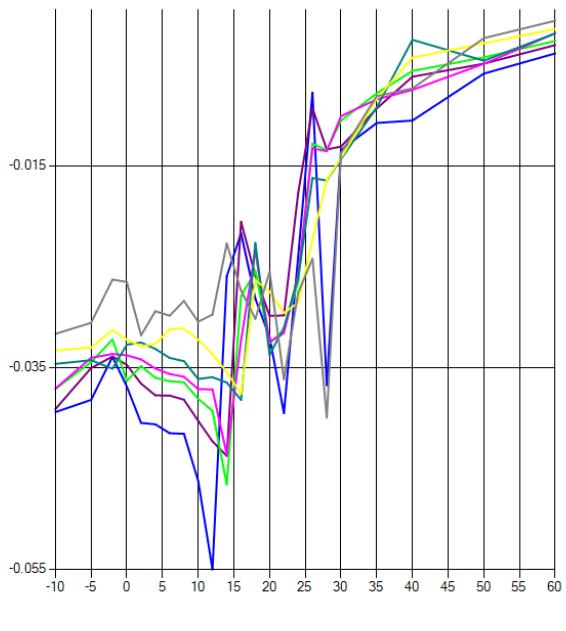
### PITCH MOMENT DUE TO ELEVON 1L

CMMDED1L (alpha,beta,DED1L=10)



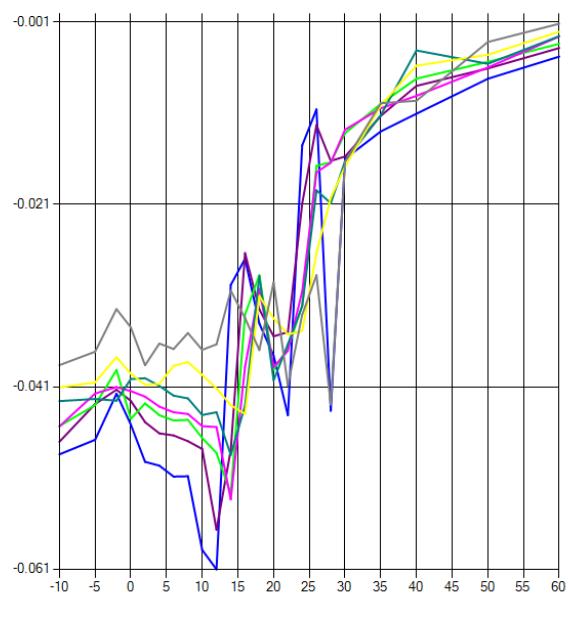
### PITCH MOMENT DUE TO ELEVON 1L

CMMDED1L (alpha,beta,DED1L=20)



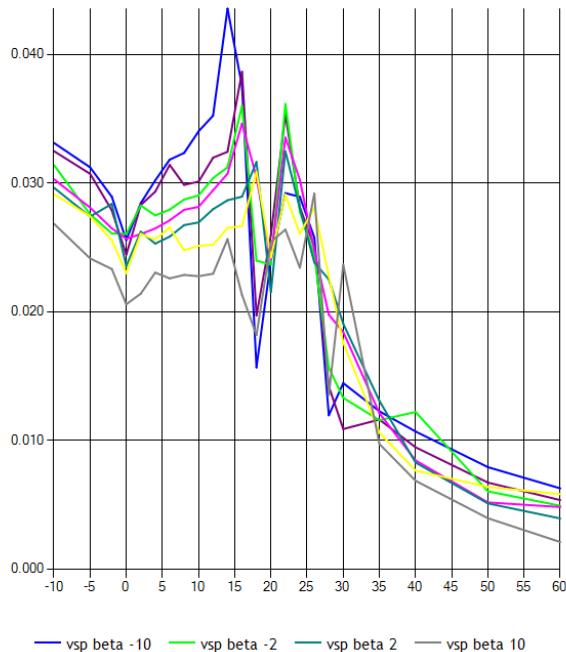
### PITCH MOMENT DUE TO ELEVON 1L

CMMDED1L (alpha,beta,DED1L=25)



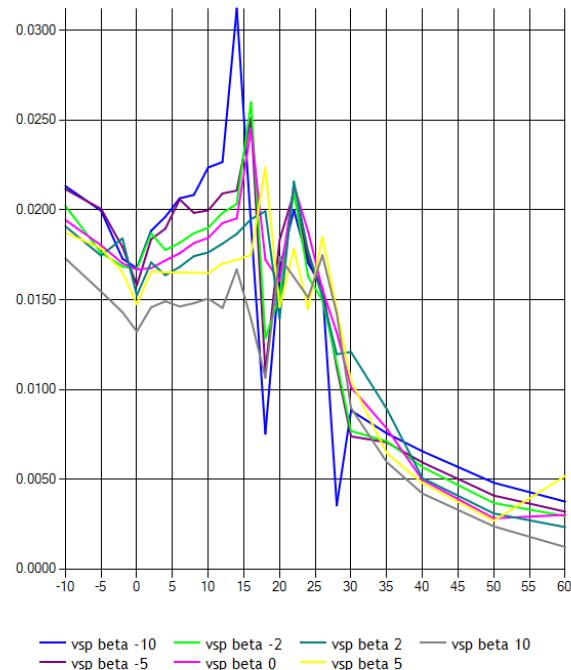
### PITCH MOMENT DUE TO ELEVON 1R

CMMDED1R (alpha,beta,DED1R=-16)



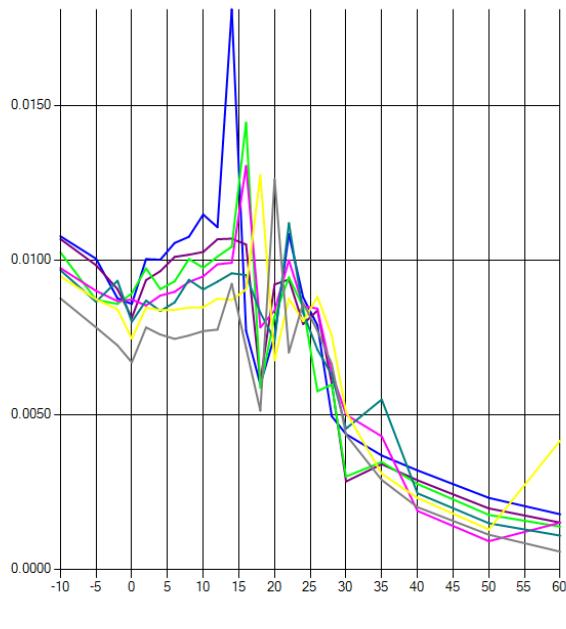
### PITCH MOMENT DUE TO ELEVON 1R

CMMDED1R (alpha,beta,DED1R=-10)



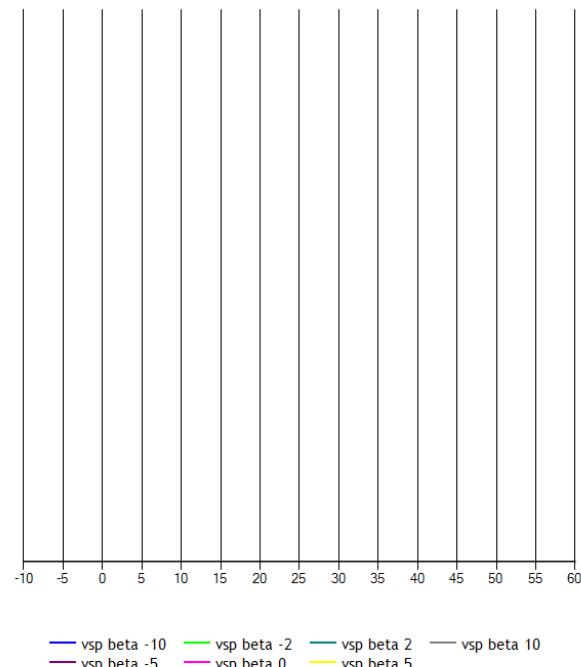
### PITCH MOMENT DUE TO ELEVON 1R

CMMDED1R (alpha,beta,DED1R=-5)



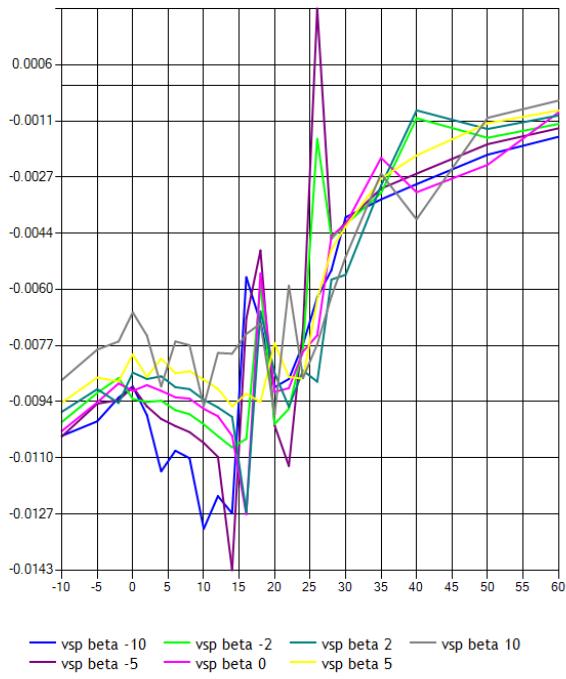
### PITCH MOMENT DUE TO ELEVON 1R

CMMDED1R (alpha,beta,DED1R=0)



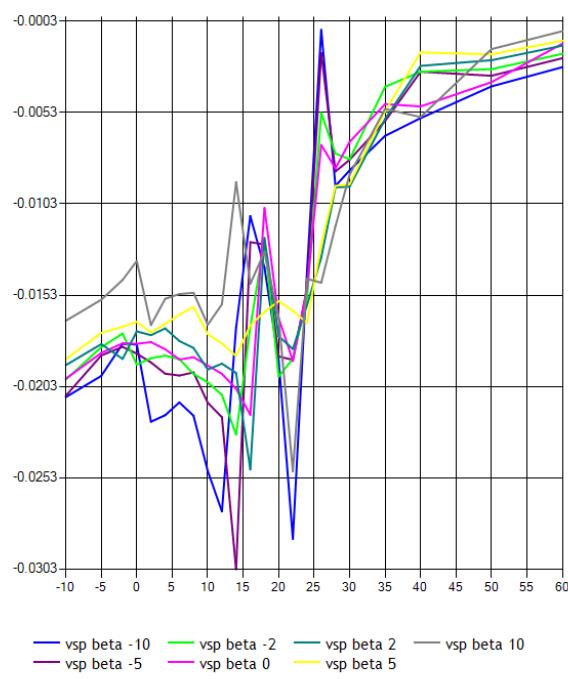
### PITCH MOMENT DUE TO ELEVON 1R

CMMDED1R (alpha,beta,DED1R=5)



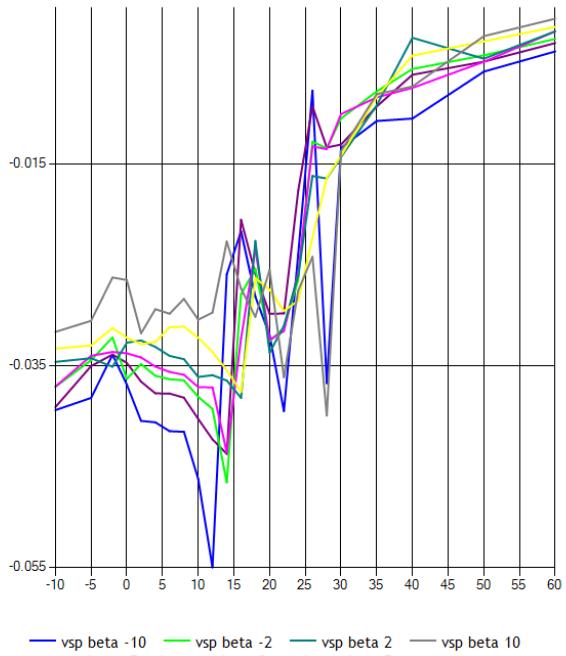
### PITCH MOMENT DUE TO ELEVON 1R

CMMDED1R (alpha,beta,DED1R=10)



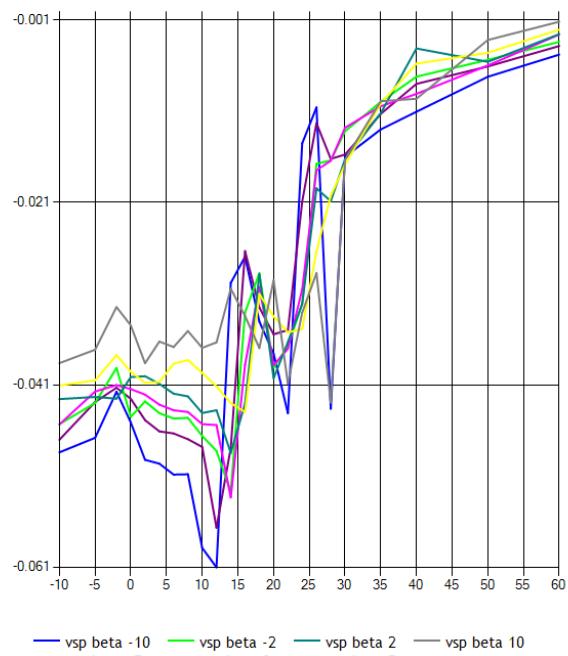
### PITCH MOMENT DUE TO ELEVON 1R

CMMDED1R (alpha,beta,DED1R=20)



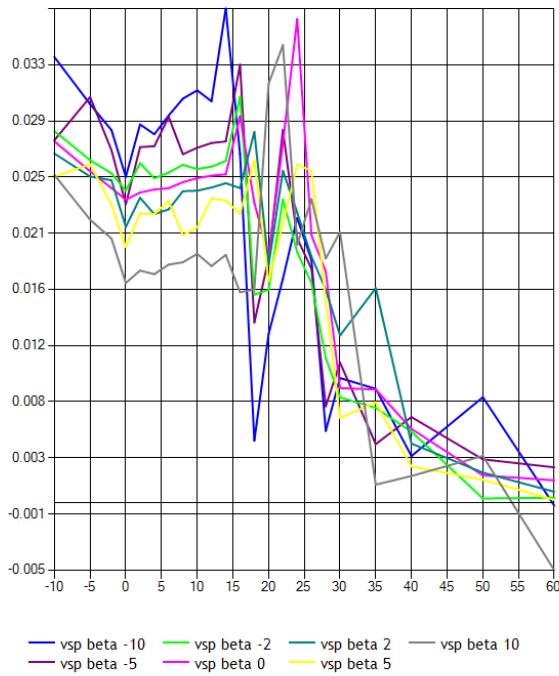
### PITCH MOMENT DUE TO ELEVON 1R

CMMDED1R (alpha,beta,DED1R=25)



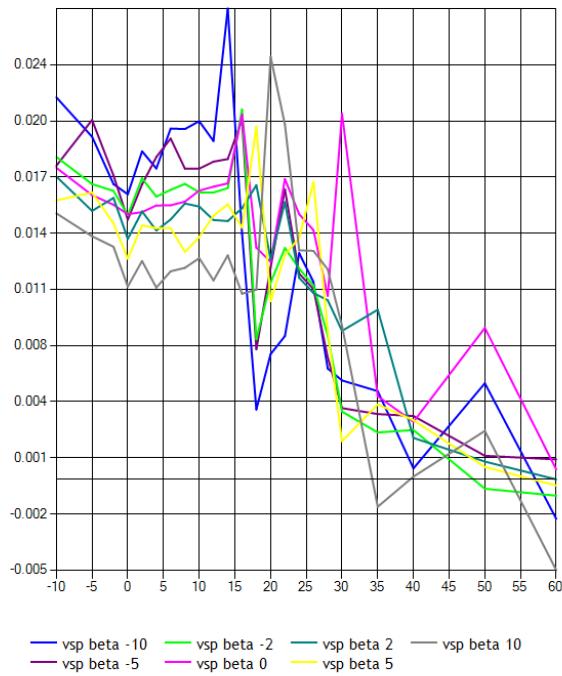
PITCH MOMENT DUE TO ELEVON 2L

CMMDED2L (alpha,beta,DED2L=-16)



PITCH MOMENT DUE TO ELEVON 2L

CMMDED2L (alpha,beta,DED2L=-10)



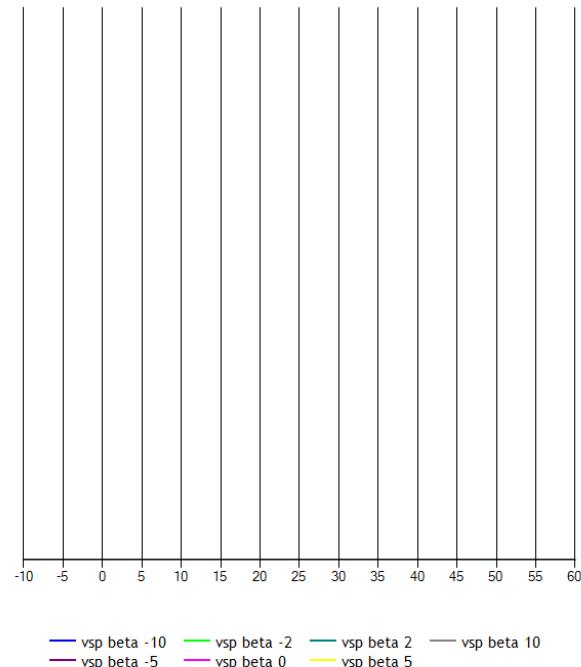
PITCH MOMENT DUE TO ELEVON 2L

CMMDED2L (alpha,beta,DED2L=-5)



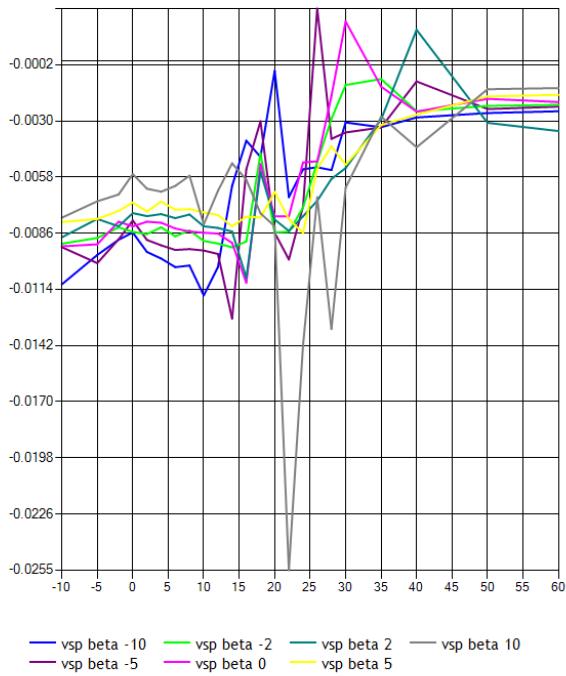
PITCH MOMENT DUE TO ELEVON 2L

CMMDED2L (alpha,beta,DED2L=0)



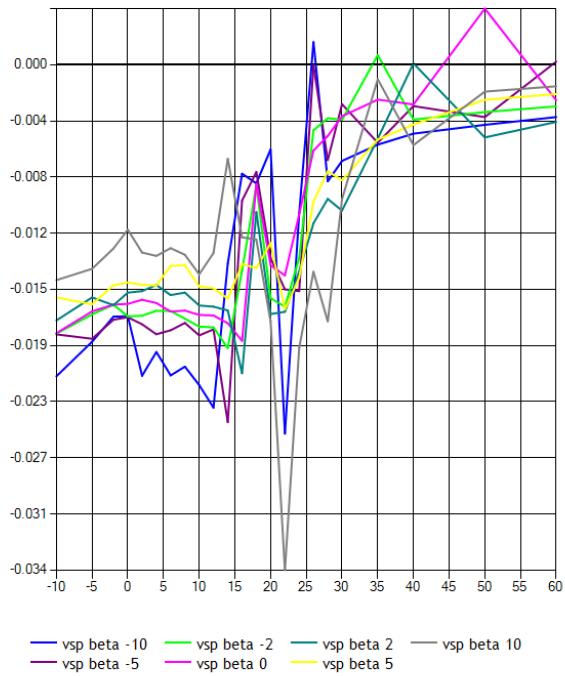
PITCH MOMENT DUE TO ELEVON 2L

CMMDED2L (alpha,beta,DED2L=5)



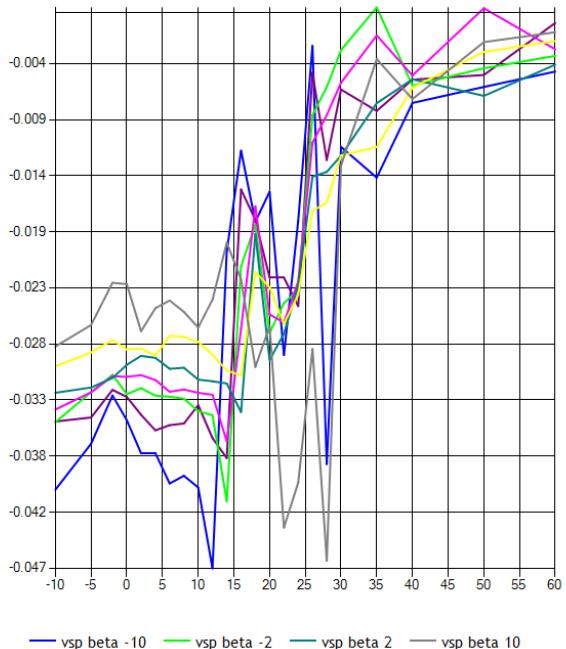
PITCH MOMENT DUE TO ELEVON 2L

CMMDED2L (alpha,beta,DED2L=10)



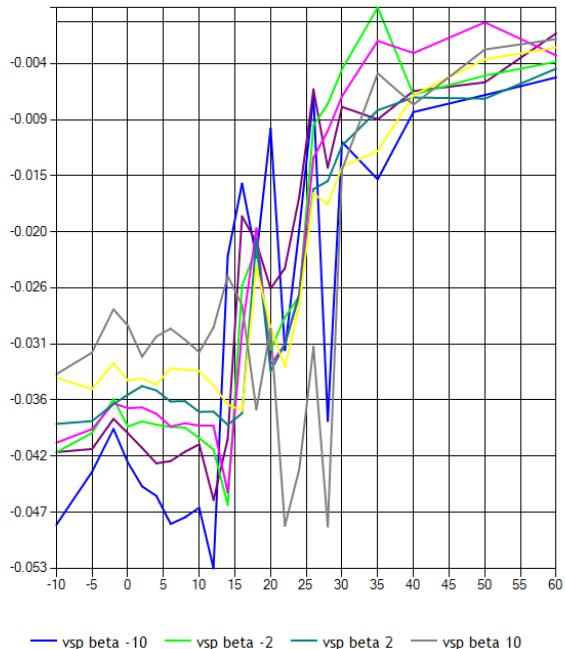
PITCH MOMENT DUE TO ELEVON 2L

CMMDED2L (alpha,beta,DED2L=20)



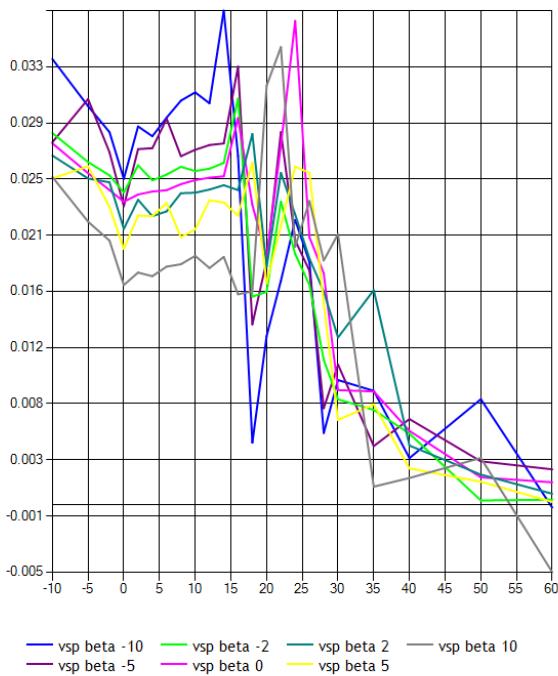
PITCH MOMENT DUE TO ELEVON 2L

CMMDED2L (alpha,beta,DED2L=25)



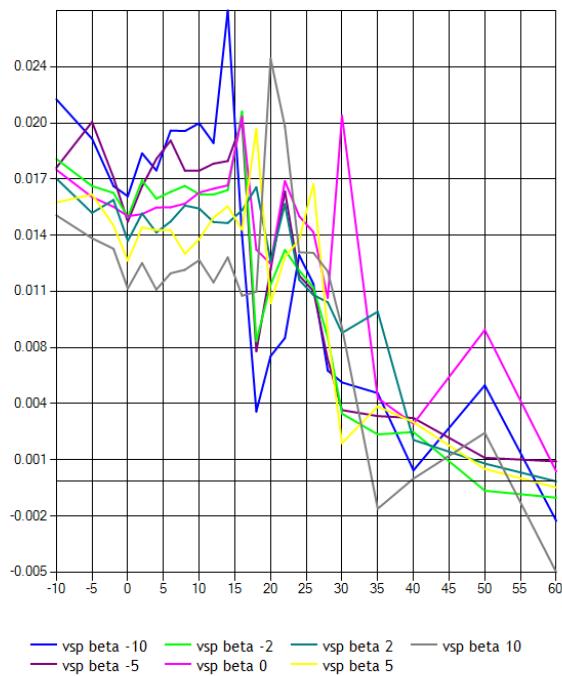
PITCH MOMENT DUE TO ELEVON 2R

CMMDED2R (alpha,beta,DED2R=-16)



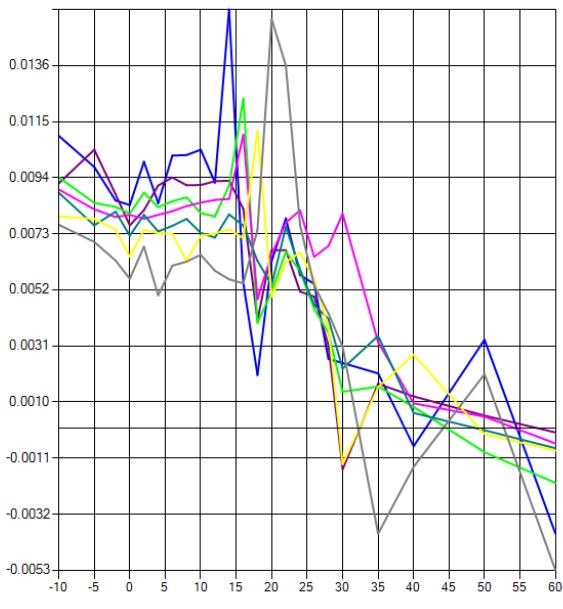
PITCH MOMENT DUE TO ELEVON 2R

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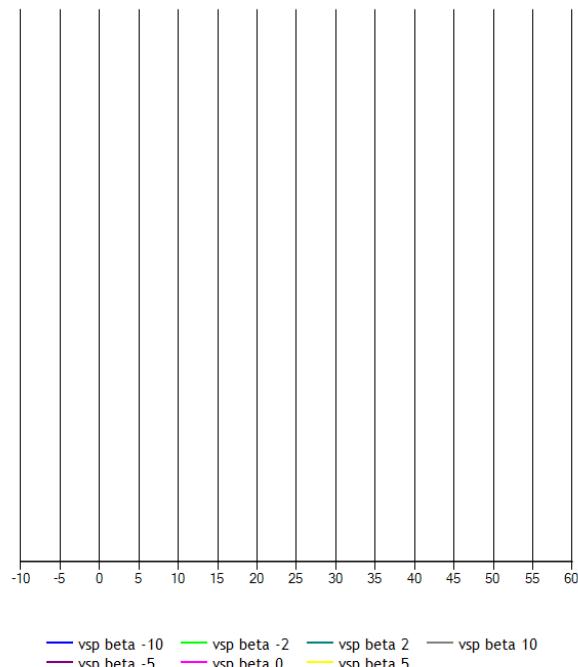
PITCH MOMENT DUE TO ELEVON 2R

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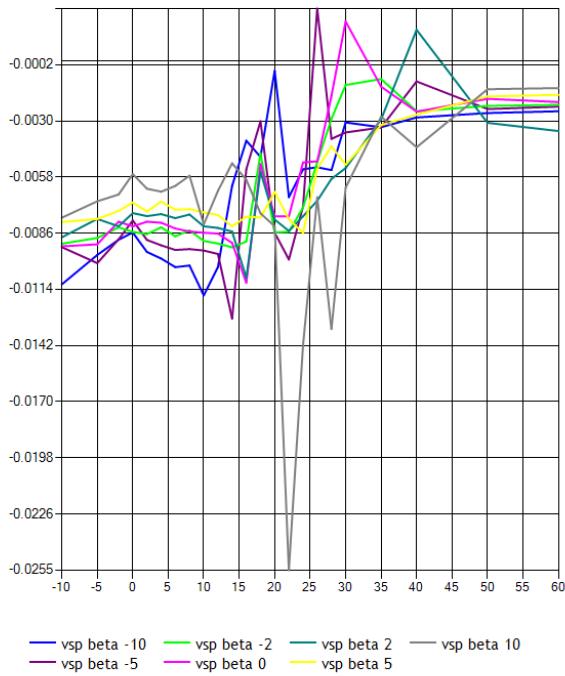
PITCH MOMENT DUE TO ELEVON 2R

CMMDED2R (alpha,beta,DED2R=0)



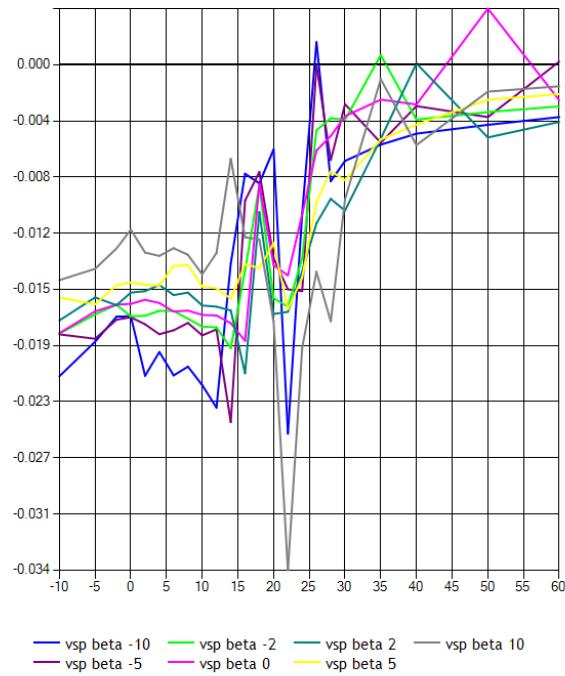
PITCH MOMENT DUE TO ELEVON 2R

CMMDED2R (alpha,beta,DED2R=5)



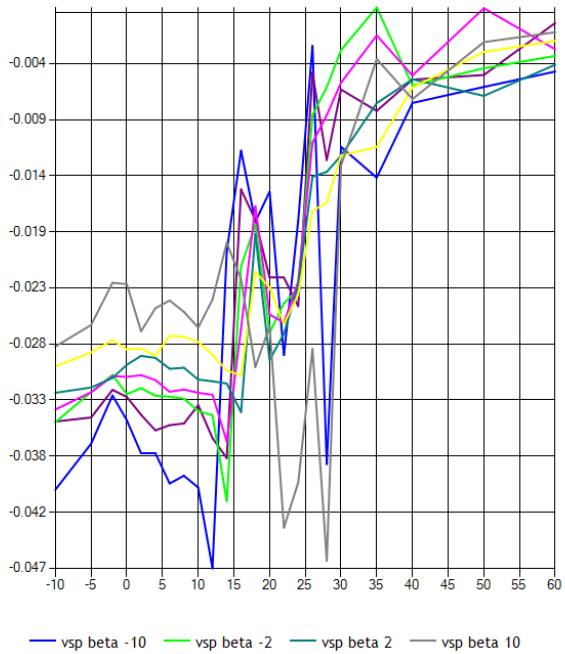
PITCH MOMENT DUE TO ELEVON 2R

CMMDED2R (alpha,beta,DED2R=10)



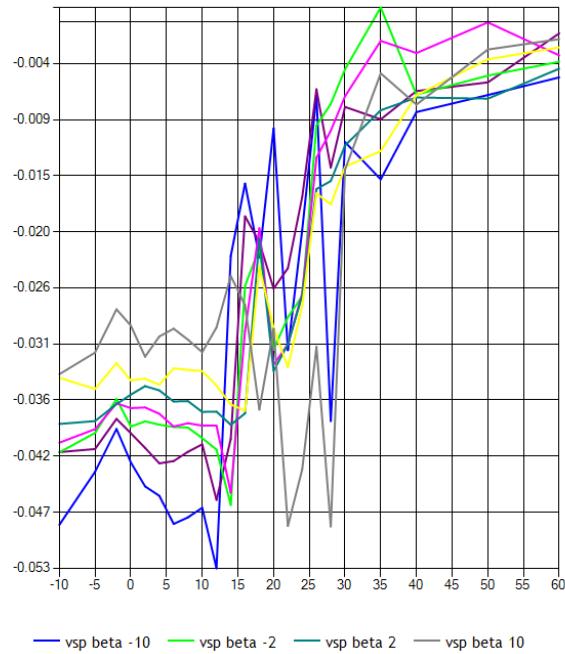
PITCH MOMENT DUE TO ELEVON 2R

CMMDED2R (alpha,beta,DED2R=20)



PITCH MOMENT DUE TO ELEVON 2R

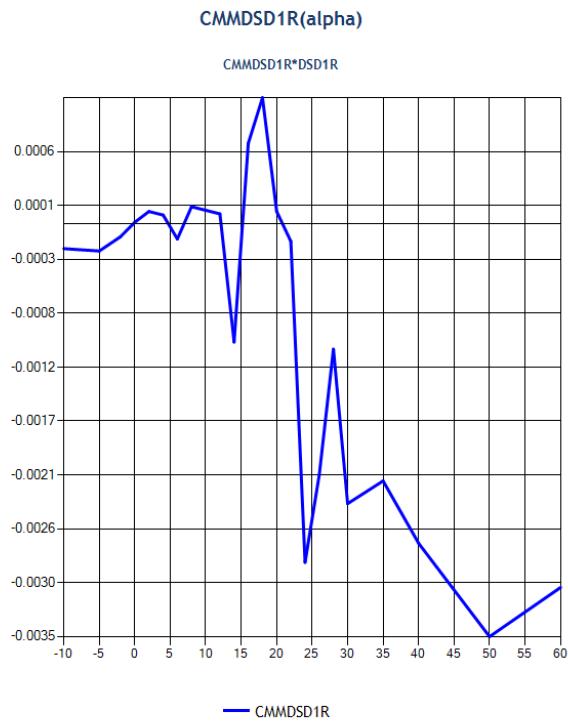
CMMDED2R (alpha,beta,DED2R=25)



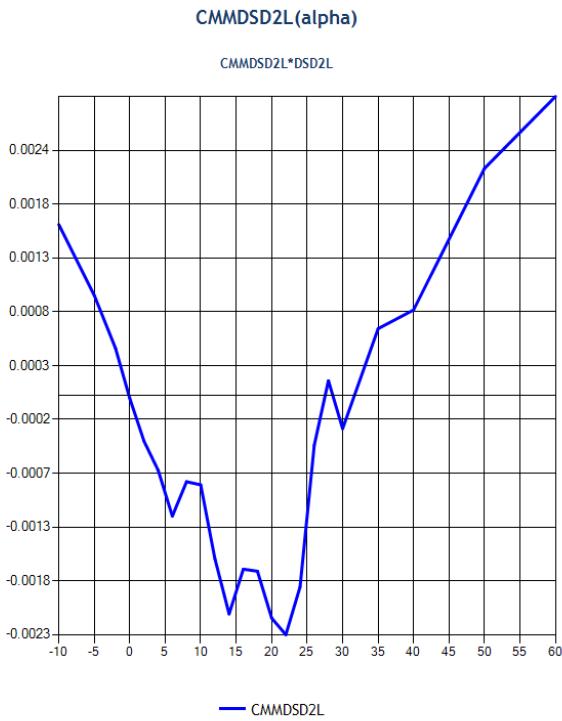
PITCH MOMENT DUE TO LE SLAT 1L



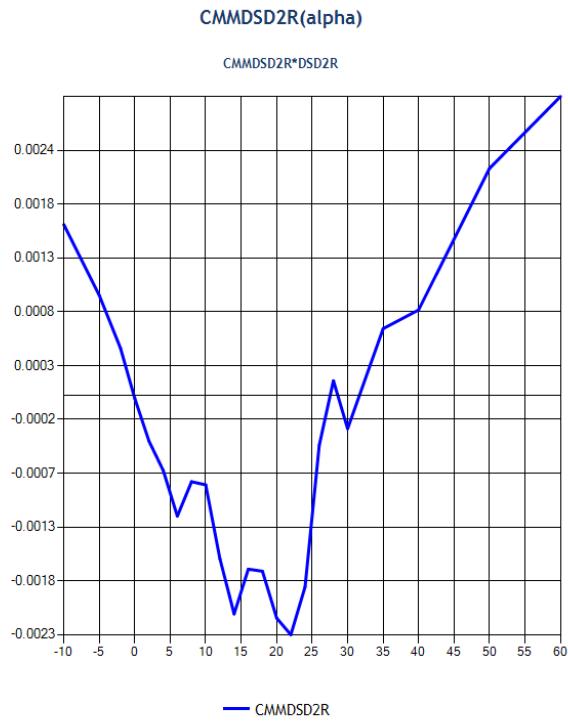
PITCH MOMENT DUE TO LE SLAT 1R



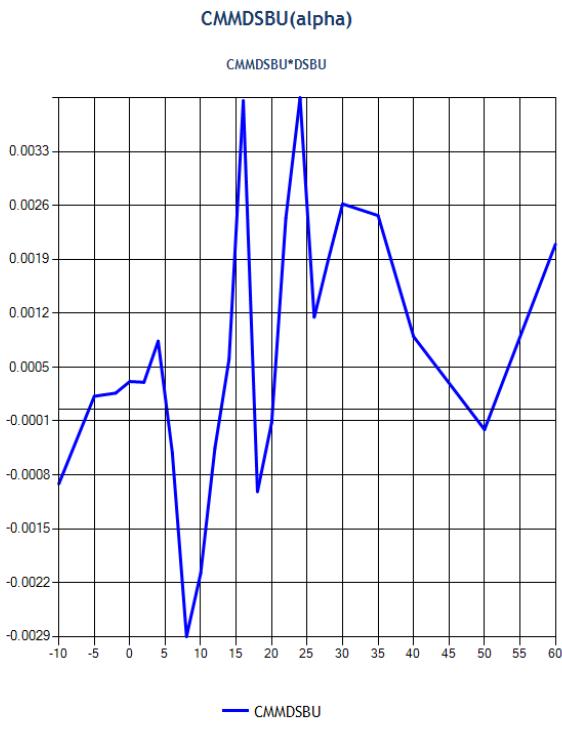
PITCH MOMENT DUE TO LE SLAT 2L



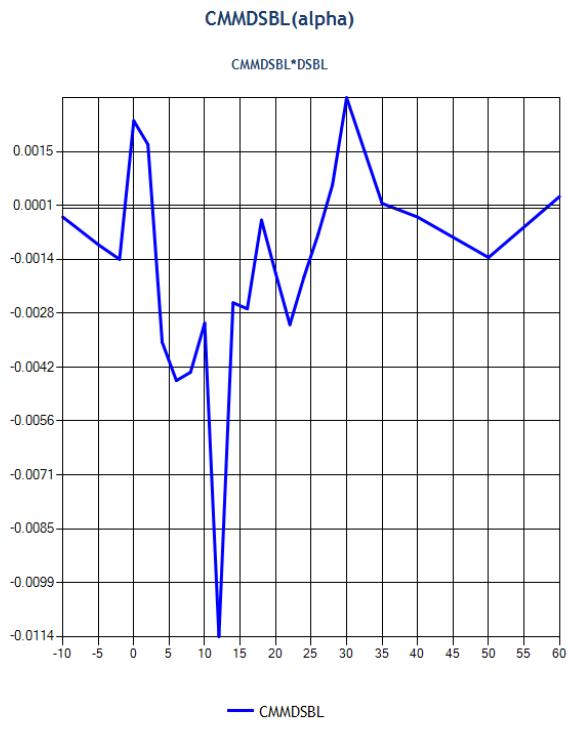
PITCH MOMENT DUE TO LE SLAT 2R



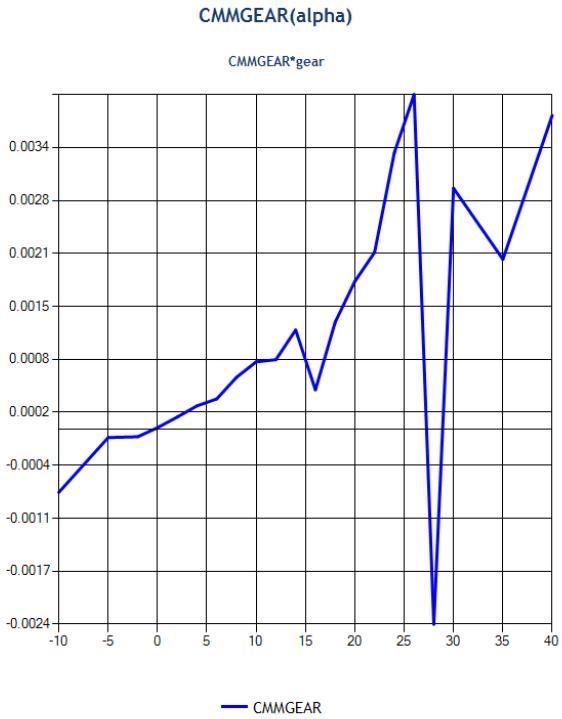
### PITCH MOMENT DUE TO UPPER SPEEDBRAKE DEFLECTION



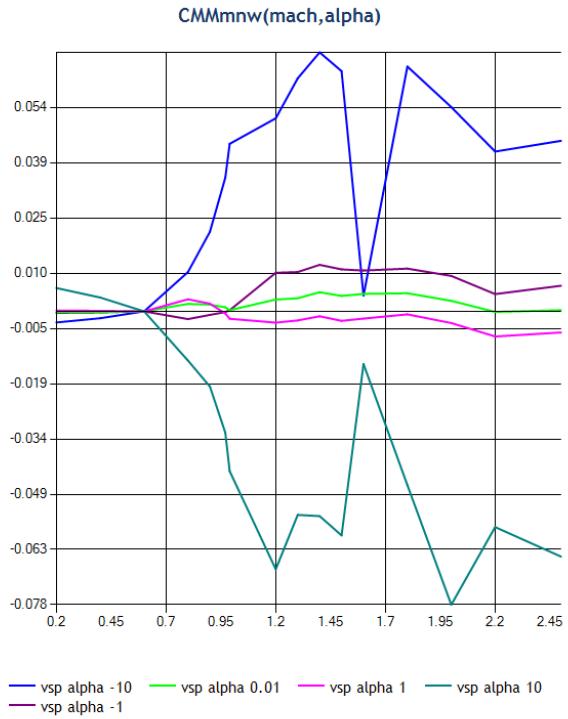
### PITCH MOMENT DUE TO LOWER SPEEDBRAKE DEFLECTION



### PITCHING MOMENT INCREMENT DUE TO GEAR

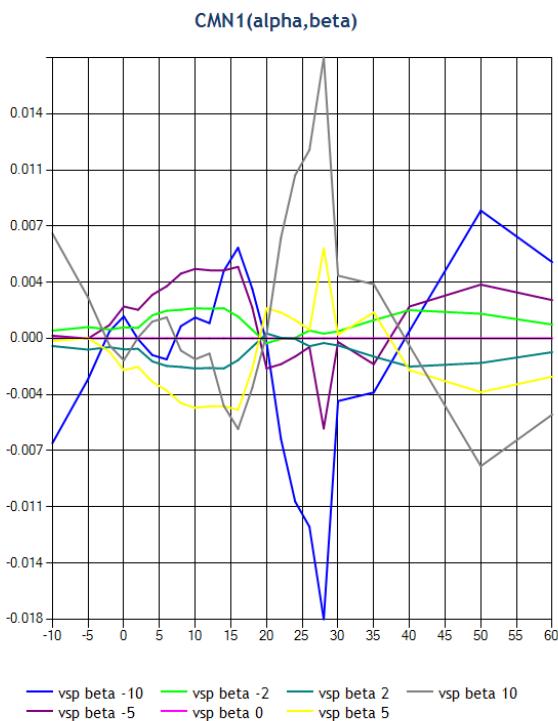


### PITCH DUE TO MACH

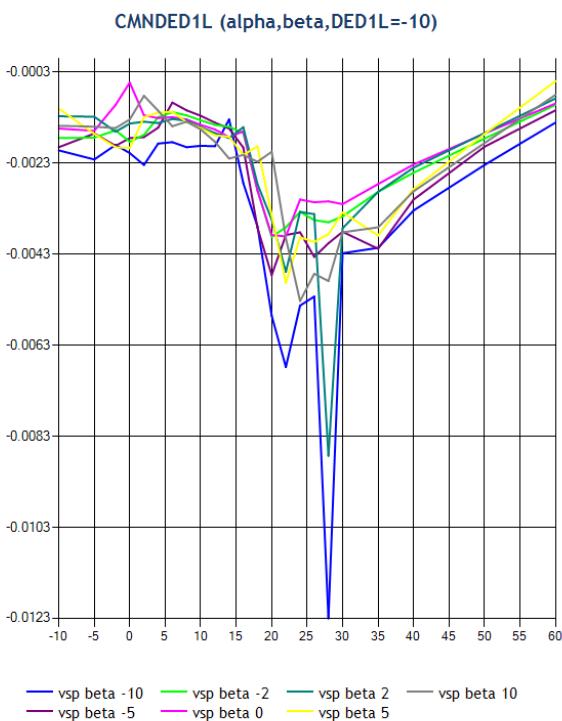


YAW

BASIC YAWING MOMENT



YAW MOMENT DUE TO ELEVON 1L

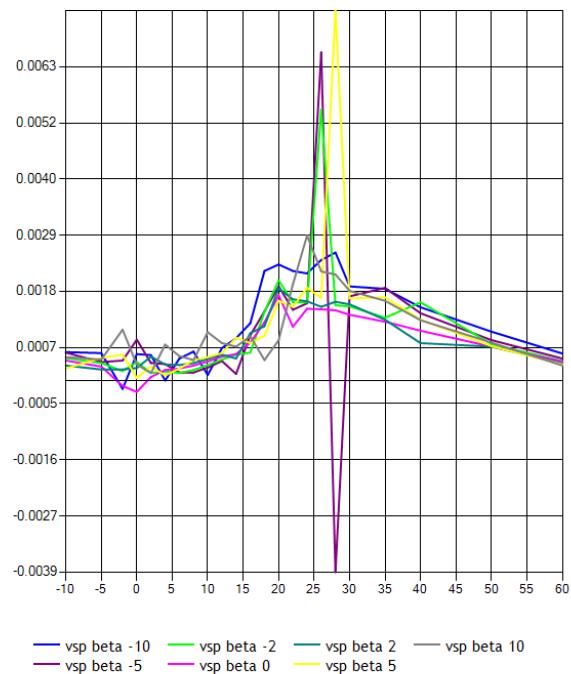
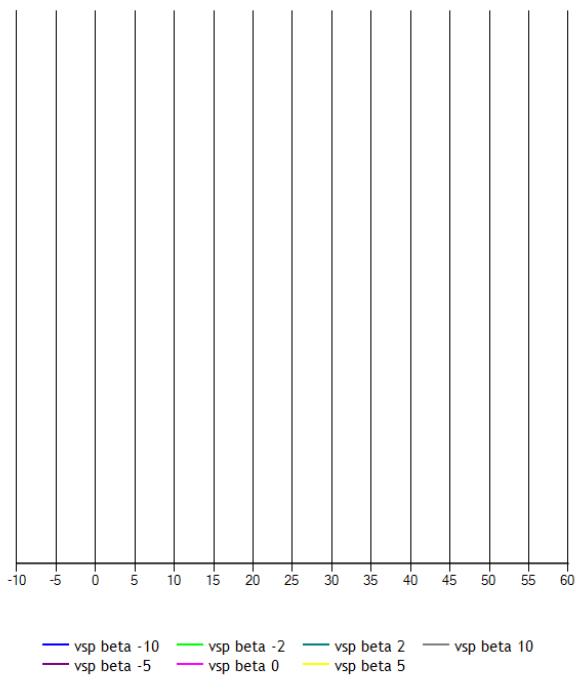


YAW MOMENT DUE TO ELEVON 1L

CMNDED1L (alpha,beta,DED1L=0)

YAW MOMENT DUE TO ELEVON 1L

CMNDED1L (alpha,beta,DED1L=5)

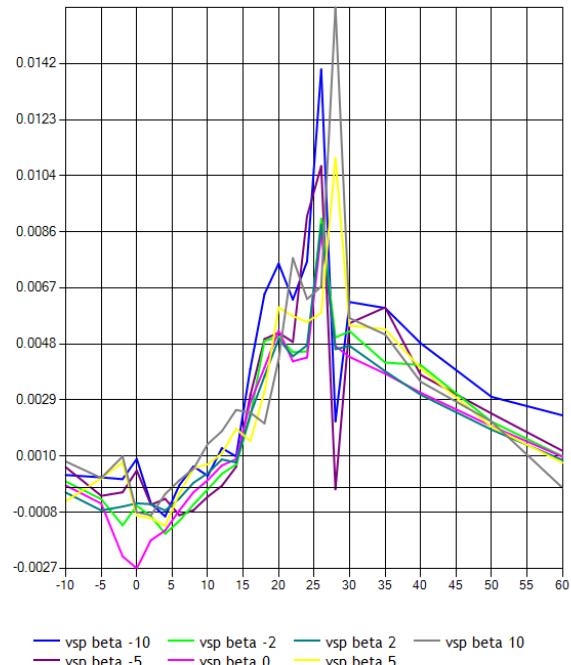
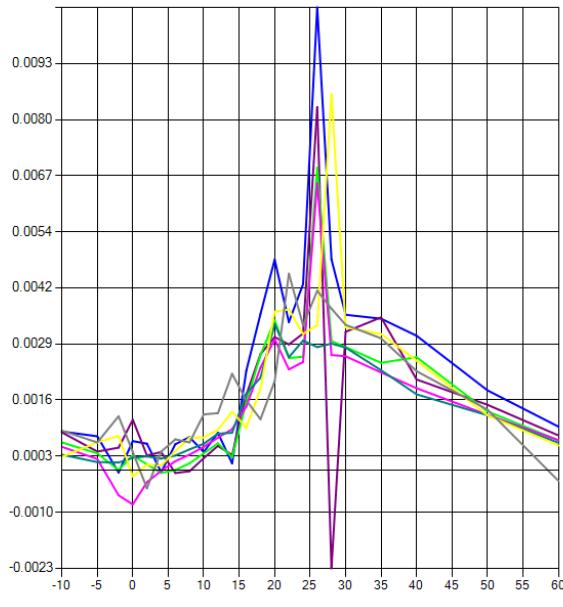


YAW MOMENT DUE TO ELEVON 1L

CMNDED1L (alpha,beta,DED1L=10)

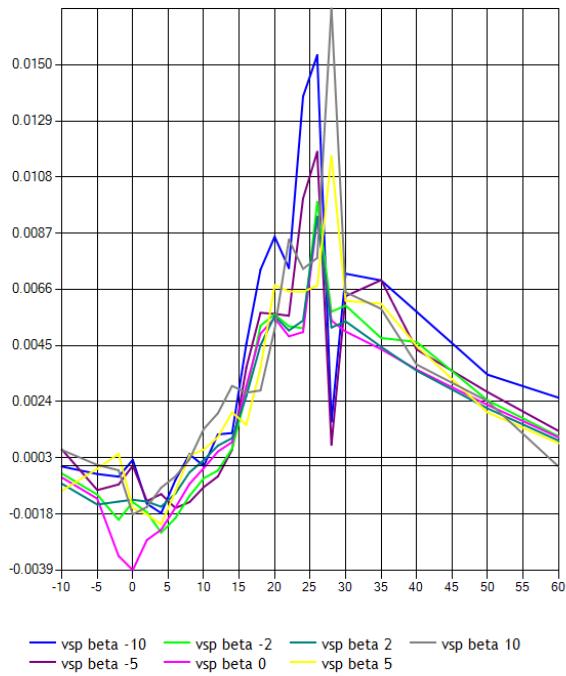
YAW MOMENT DUE TO ELEVON 1L

CMNDED1L (alpha,beta,DED1L=20)



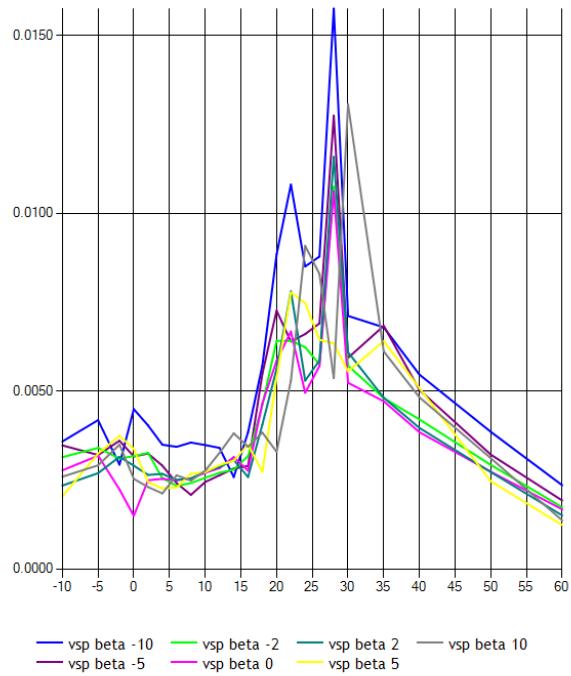
YAW MOMENT DUE TO ELEVON 1L

CMNDED1L (alpha,beta,DED1L=25)



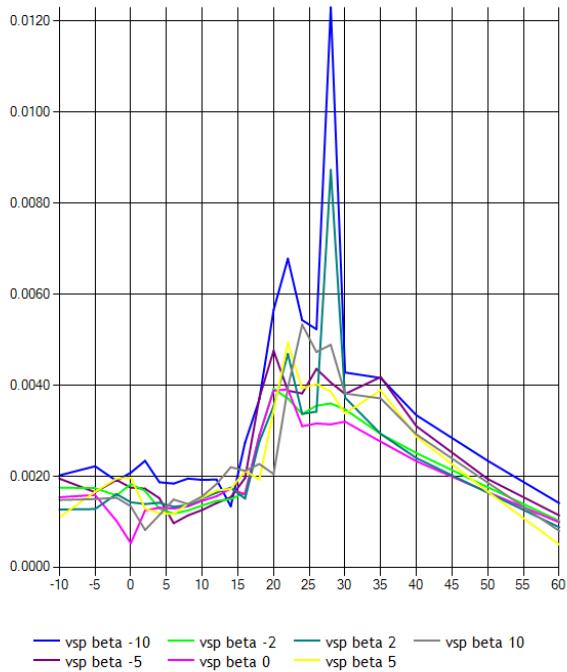
YAW MOMENT DUE TO ELEVON 1R

CMNDED1R (alpha,beta,DED1R=-16)



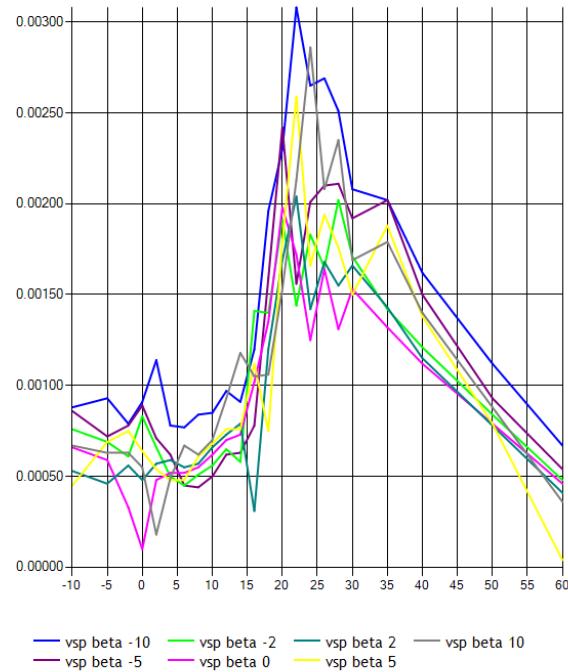
YAW MOMENT DUE TO ELEVON 1R

CMNDED1R (alpha,beta,DED1R=-10)



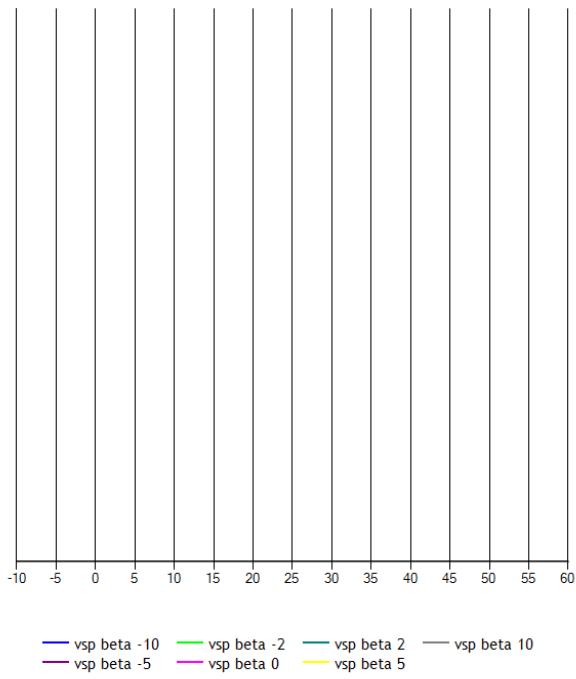
YAW MOMENT DUE TO ELEVON 1R

CMNDED1R (alpha,beta,DED1R=-5)



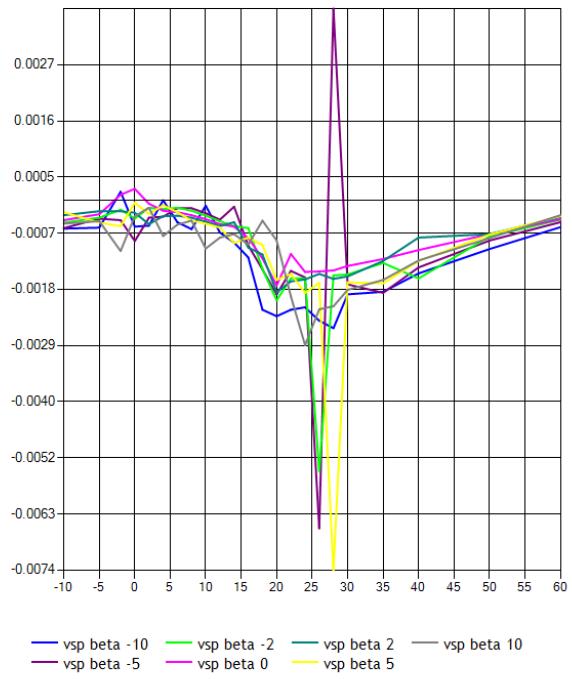
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CMNDED1R (alpha,beta,DED1R=0)



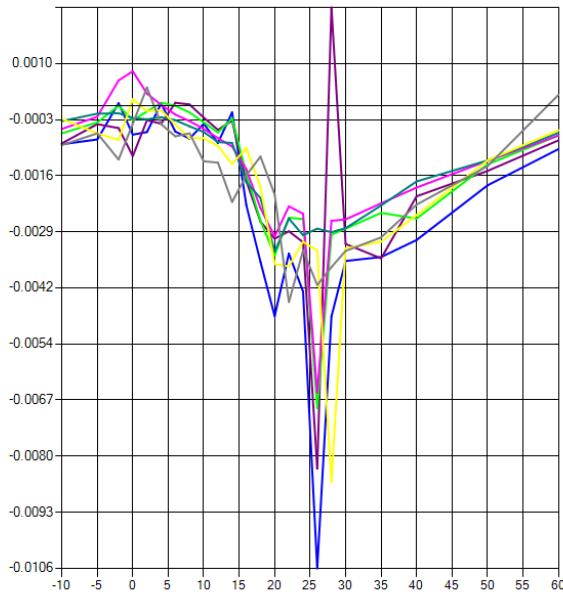
### YAW MOMENT DUE TO ELEVON 1R

CMNDED1R (alpha,beta,DED1R=5)



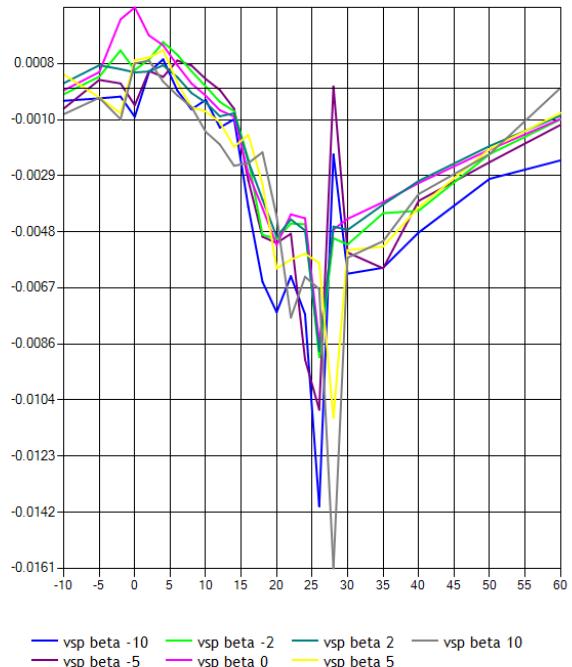
### YAW MOMENT DUE TO ELEVON 1R

CMNDED1R (alpha,beta,DED1R=10)

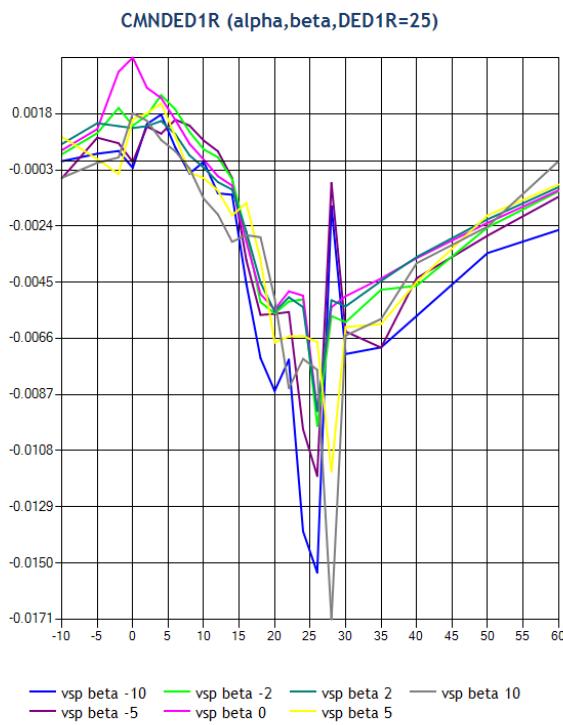


### YAW MOMENT DUE TO ELEVON 1R

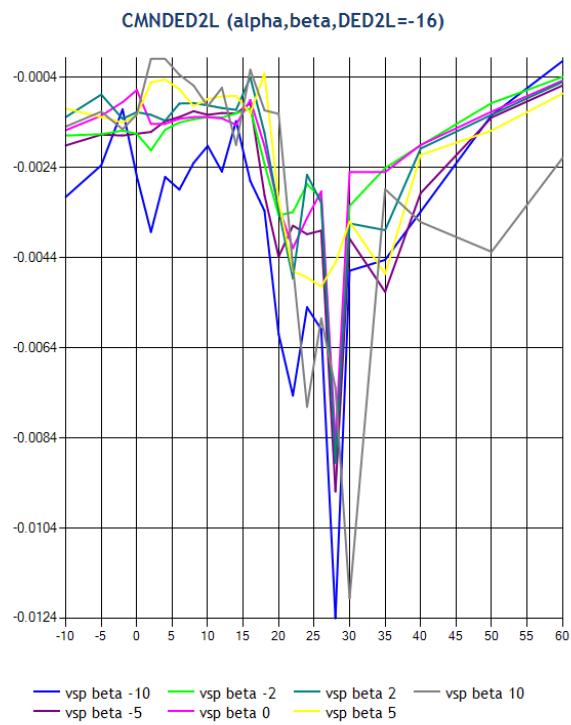
CMNDED1R (alpha,beta,DED1R=20)



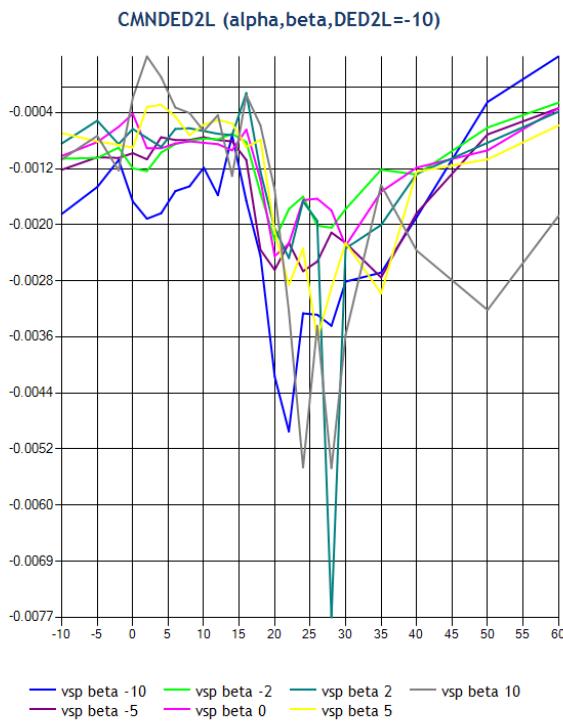
YAW MOMENT DUE TO ELEVON 1R



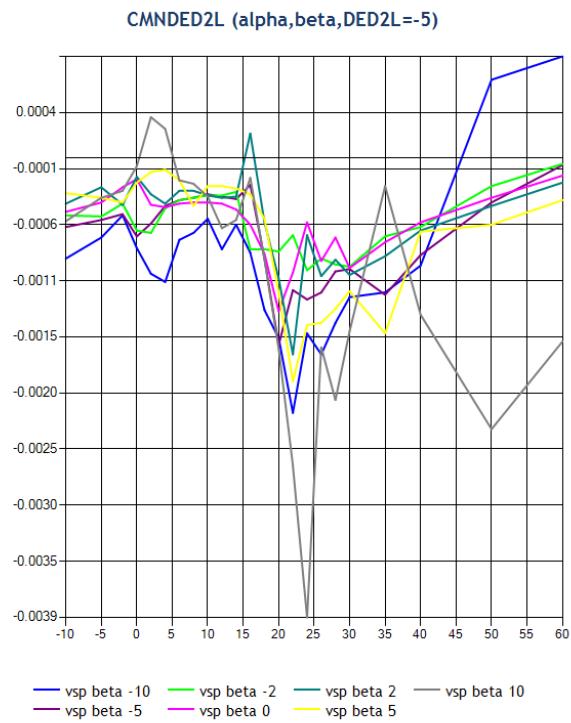
YAW MOMENT DUE TO ELEVON 2L



YAW MOMENT DUE TO ELEVON 2L



YAW MOMENT DUE TO ELEVON 2L

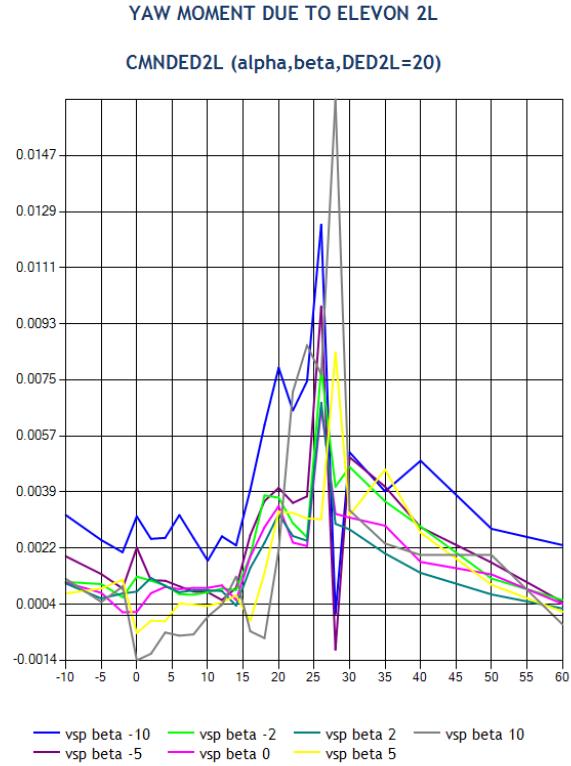
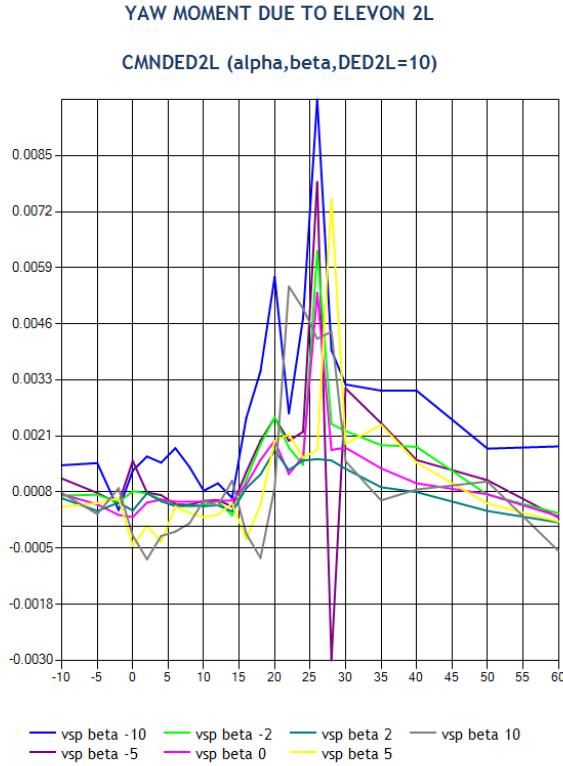
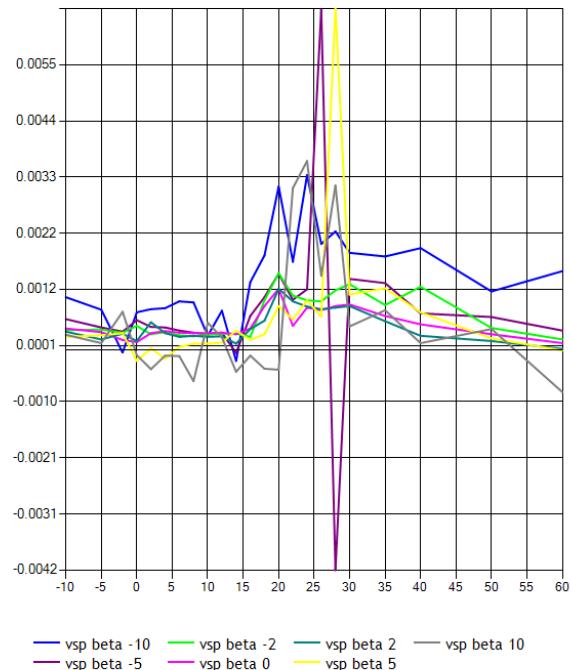
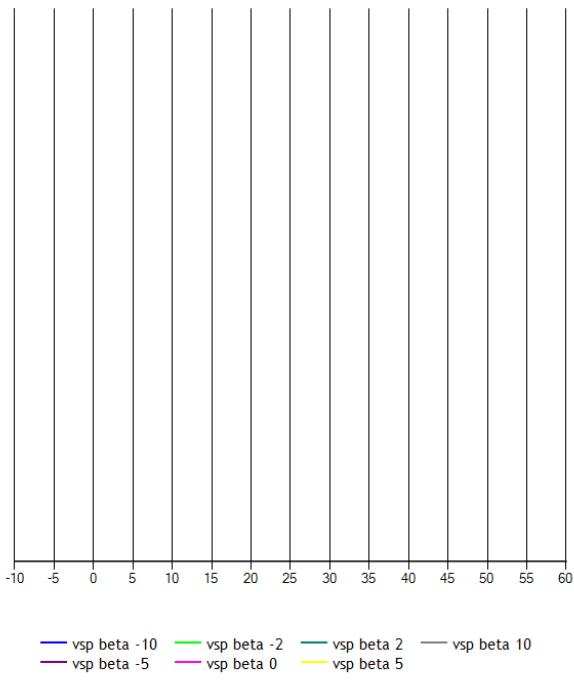


YAW MOMENT DUE TO ELEVON 2L

CMNDED2L (alpha,beta,DED2L=0)

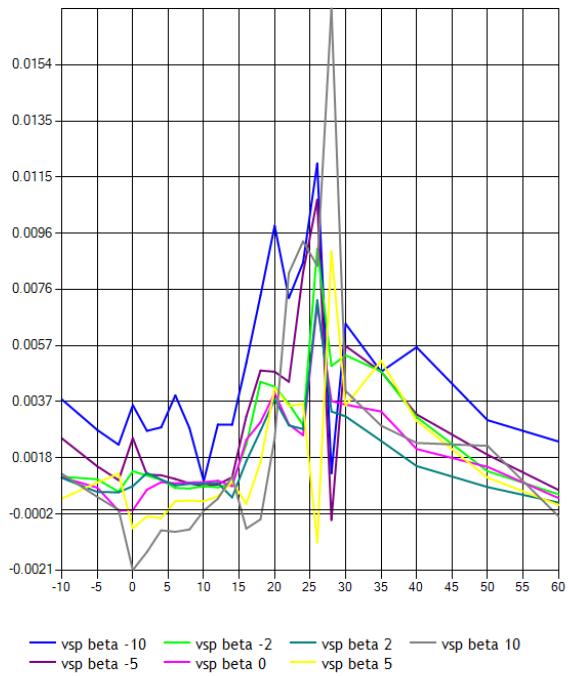
YAW MOMENT DUE TO ELEVON 2L

CMNDED2L (alpha,beta,DED2L=5)



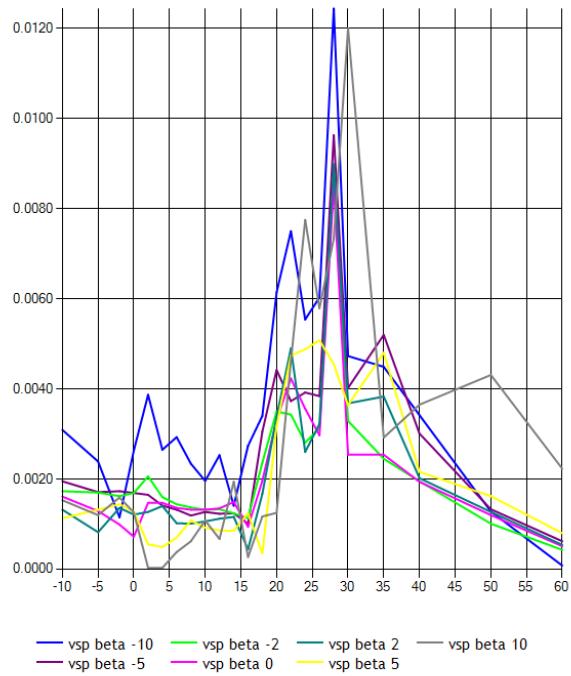
YAW MOMENT DUE TO ELEVON 2L

CMNDED2L (alpha,beta,DED2L=25)



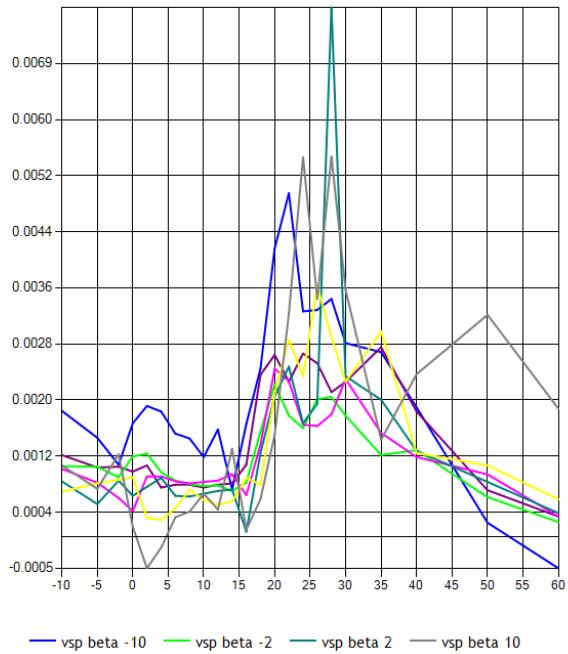
YAW MOMENT DUE TO ELEVON 2R

CMNDED2R (alpha,beta,DED2R=-16)



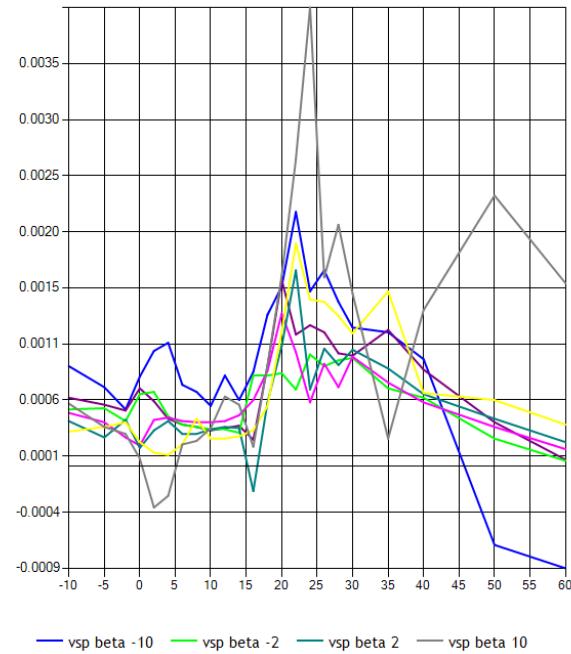
YAW MOMENT DUE TO ELEVON 2R

CMNDED2R (alpha,beta,DED2R=-10)



YAW MOMENT DUE TO ELEVON 2R

CMNDED2R (alpha,beta,DED2R=-5)

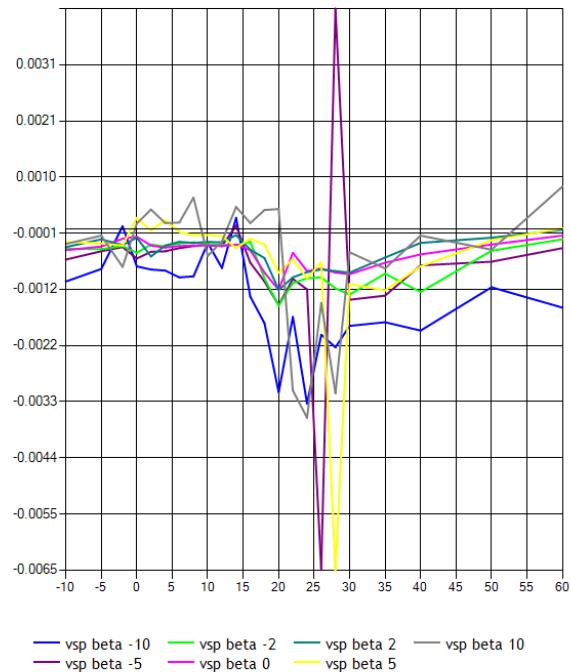
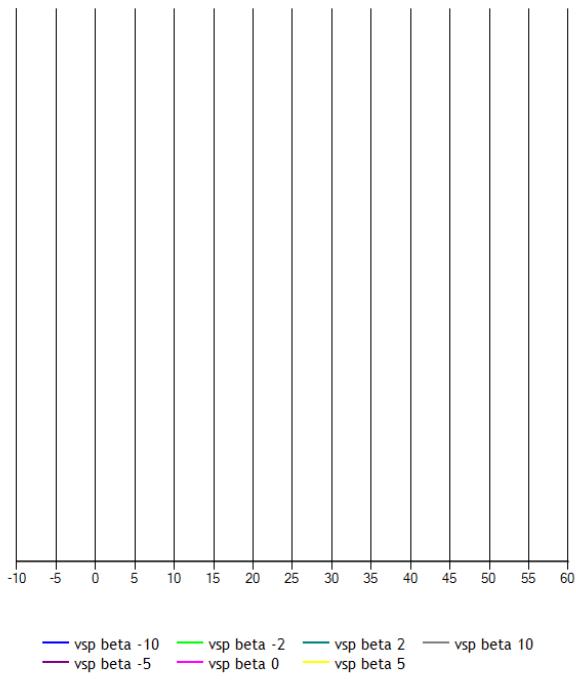


YAW MOMENT DUE TO ELEVON 2R

CMNDED2R (alpha,beta,DED2R=0)

YAW MOMENT DUE TO ELEVON 2R

CMNDED2R (alpha,beta,DED2R=5)

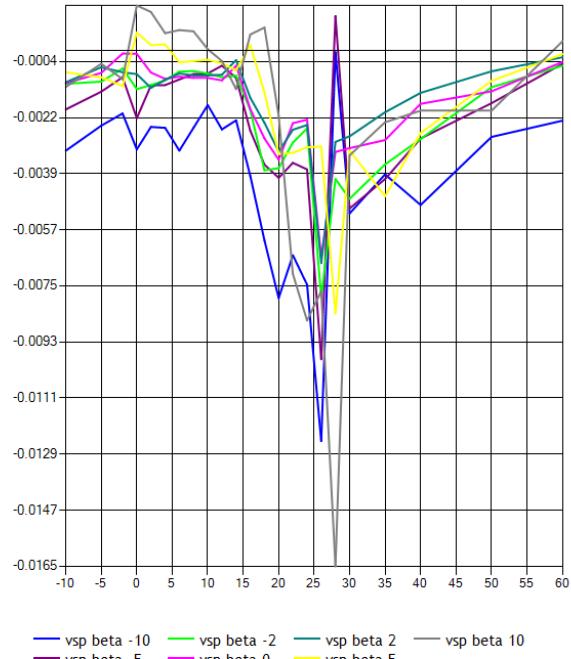
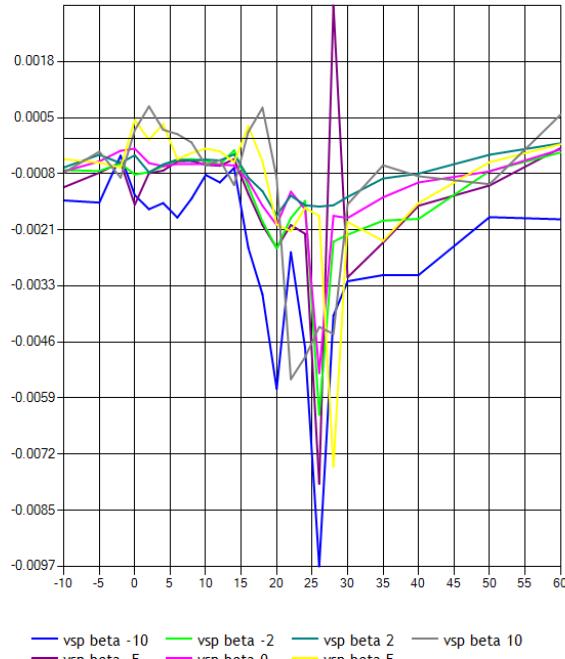


YAW MOMENT DUE TO ELEVON 2R

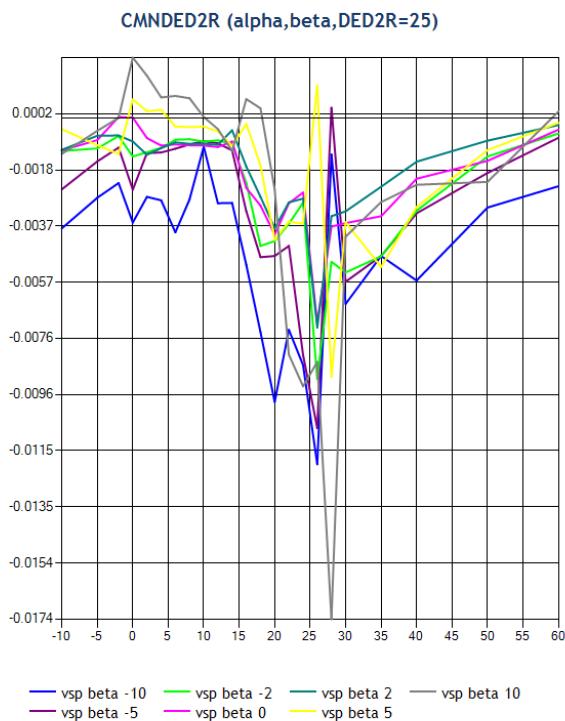
CMNDED2R (alpha,beta,DED2R=10)

YAW MOMENT DUE TO ELEVON 2R

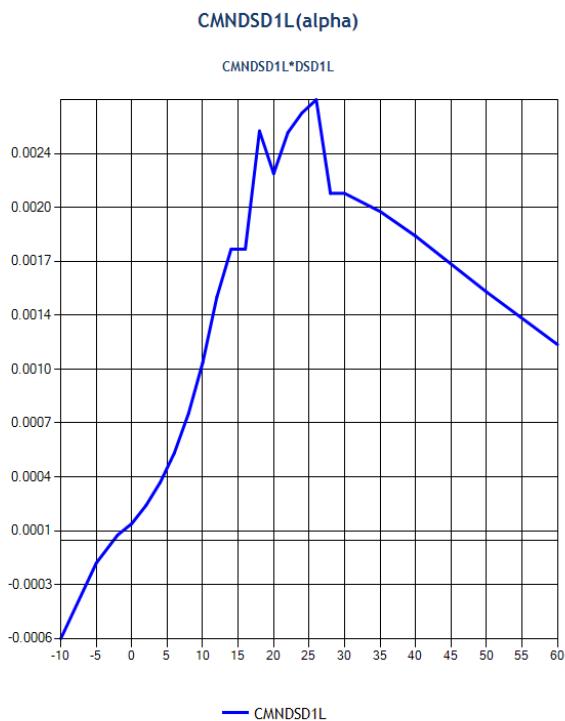
CMNDED2R (alpha,beta,DED2R=20)



YAW MOMENT DUE TO ELEVON 2R



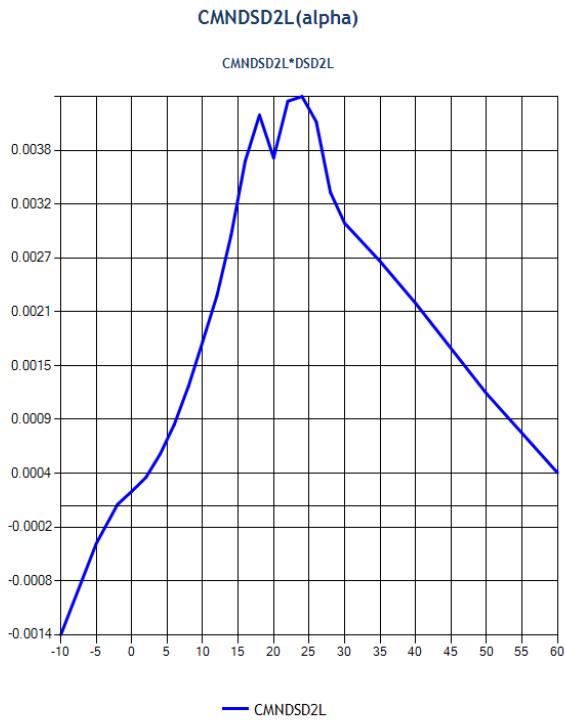
YAW MOMENT DUE TO LE SLAT 1L



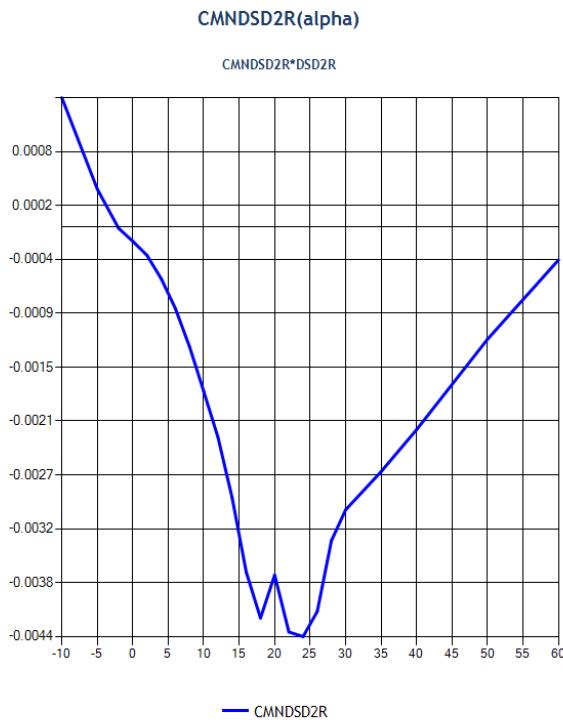
YAW MOMENT DUE TO LE SLAT 1R



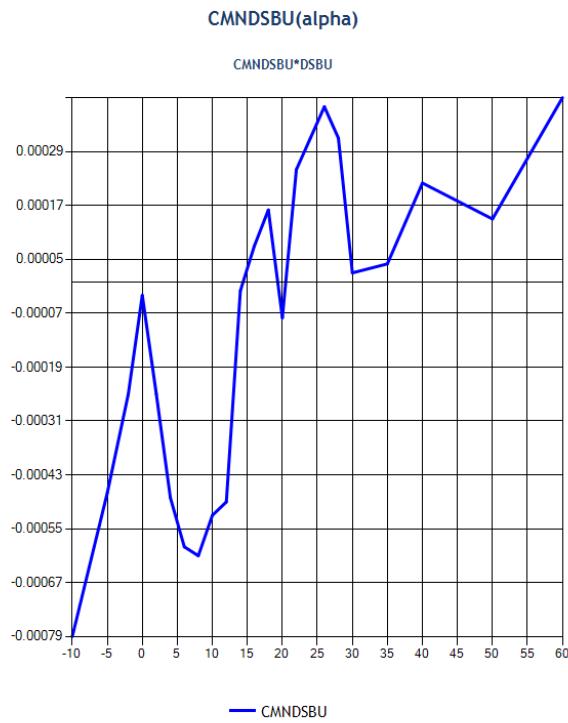
YAW MOMENT DUE TO LE SLAT 2L



YAW MOMENT DUE TO LE SLAT 2R



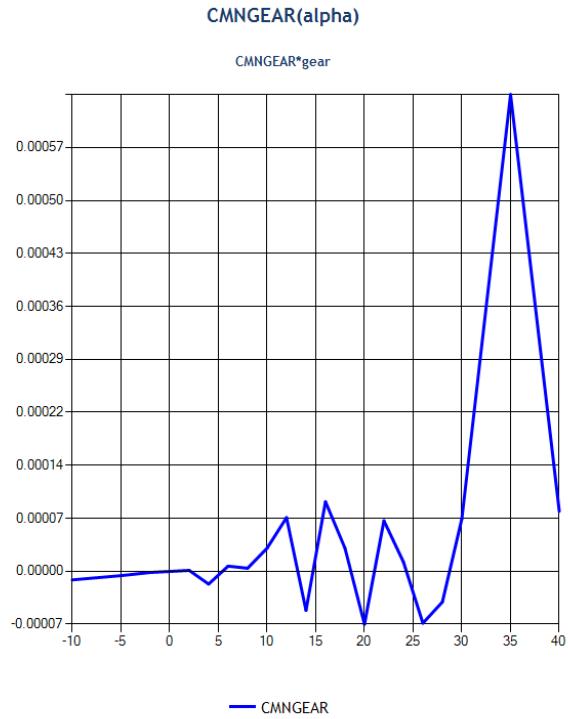
YAW MOMENT DUE TO UPPER SPEEDBRAKE DEFLECTION



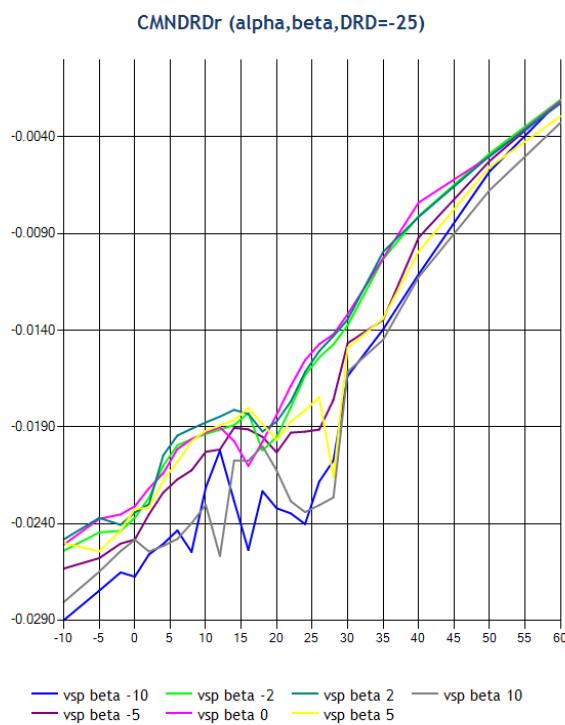
YAW MOMENT DUE TO LOWER SPEEDBRAKE DEFLECTION



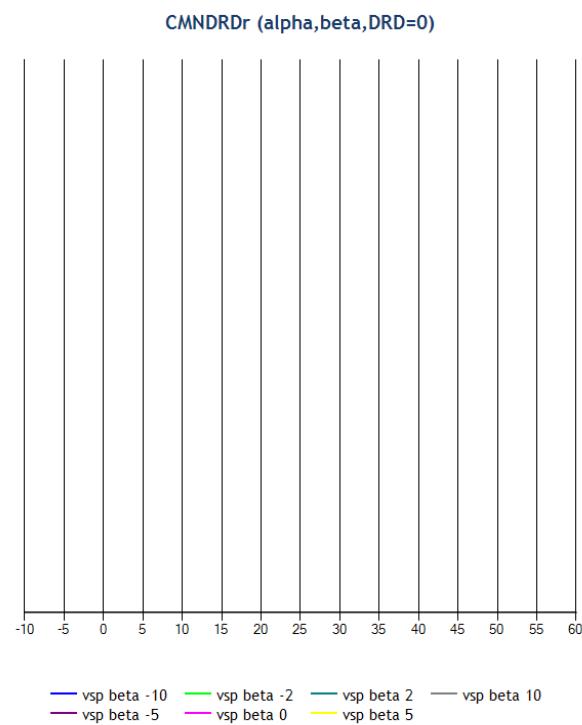
YAWING MOMENT INCREMENT DUE TO GEAR



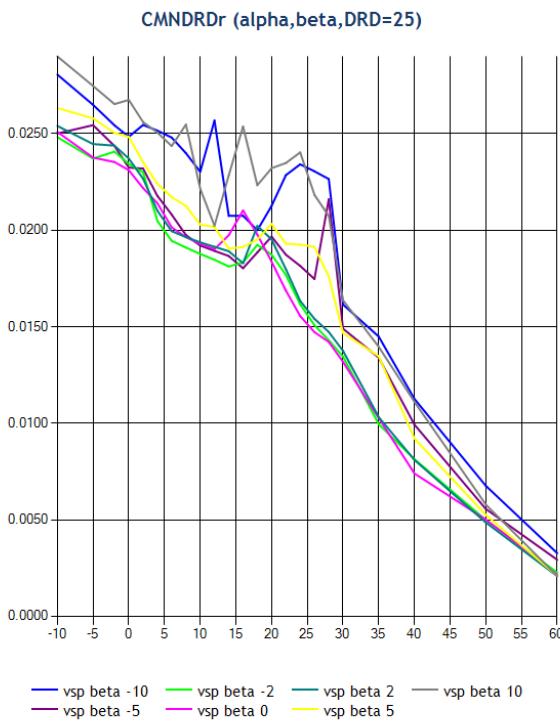
### YAWING MOMENT DUE TO RUDDER DEFLECTION



### YAWING MOMENT DUE TO RUDDER DEFLECTION

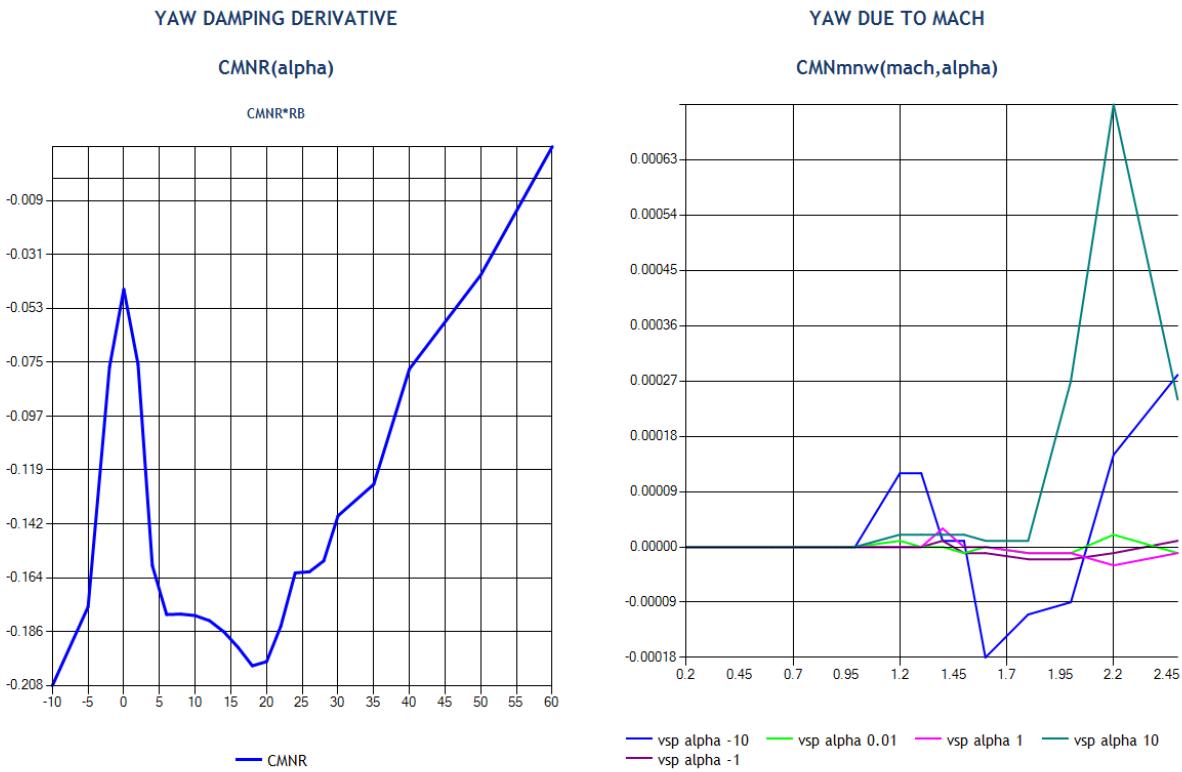


### YAWING MOMENT DUE TO RUDDER DEFLECTION



### YAWING MOMENT DUE TO ROLL RATE





## References

- Richard Harrison, rjh@zaretto.com: Mirage 2000-5 Aerodynamic data built from vspaero; AeroRP (8.6, 0, 0.617)M, ZDAT/AED/2017/09-08, September, 2017: <http://www.zaretto.com/sites/zaretto.com/files/Mirage2000-data-data/rjh-zaretto-Mirage2000-aerodynamic-data-vspaero.pdf>

## Mass and balance

Element	X	Y	Z	Unit
Aerodynamic Reference Point (CoP)	8.60	0.00	0.62	M
Aircraft CG	8.60	0.00	0.62	M

Element	Unit
I <sub>XX</sub>	6262.00
I <sub>YY</sub>	75686.00
I <sub>ZZ</sub>	78802.00
I <sub>XZ</sub>	2141.00

Element	X	Y	Z	Unit	Weight

## Ground Reactions

Element	X	Y	Z	Unit	Index
NOSE_LG	4.01	0.00	-2.73	M	0
LEFT_MLG	9.00	-1.80	-2.65	M	1
RIGHT_MLG	9.00	1.80	-2.65	M	2
LEFT_WING_TIP	11.71	-4.53	-0.25	M	3
RIGHT_WING_TIP	11.71	4.53	-0.25	M	4
CANOPY	4.27	0.00	1.46	M	5

REAR_CANOPY	5.05	0.00	1.58	M	6
RADOME_FRONT	0.00	0.00	0.00	M	7
VERTICAL_TAIL_FRONT	13.06	0.00	3.63	M	8
VERTICAL_TAIL_REAR	13.72	0.00	3.54	M	9
REAR_BODY_LEFT	13.63	-0.50	0.53	M	10
REAR_BODY_RIGHT	13.63	0.50	0.53	M	11
LOWER_REAR_BODY	13.63	0.00	0.03	M	12
LOWER_MID_REAR_BODY	11.56	0.00	-0.32	M	13
REFUEL_PROBE	1.53	0.55	1.17	M	14
LEFT_STRAKE	5.21	-1.13	0.64	M	15
RIGHT_STRAKE	5.21	1.13	0.64	M	16
FRONT_LOWER_ANTENNA	2.35	0.00	-0.39	M	17
VSTAB_FRONT_ANTENNA	11.98	0.00	3.06	M	18
VSTAB_REAR_ANTENNA	13.74	0.00	2.98	M	19
CHUTE	13.83	0.00	1.21	M	20

## Metrics

Element	Unit
Chord	M
Wingspan	M
Wing Area	M2
Wing Incidence	DEG
CIMax	ND

## Propulsion

Element	X	Y	Z	Unit	Feed
SNECMA_M53-P2	18.15	0.00	0.62	M	Feed line [0],External Tank [1],Right Wing Tank [2],Left Wing Tank [3],Main Tank [4]

## Tanks

Element	X	Y	Z	Unit	Capacity	Id	Priority	Standpipe
Feed line	8.60	0.00	0.62	M	10 LBS	0	1	
External Tank	8.60	0.00	0.01	M	1200 KG	1	2	50 KG
Right Wing Tank	8.60	4.00	0.22	M	385 LBS	2	3	100 LBS
Left Wing Tank	8.60	-4.00	0.22	M	385 LBS	3	3	100 LBS
Main Tank	8.60	0.00	0.62	M	2128 KG	4	4	50 KG

## Systems

Name
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Mirage-2000-hydraulics

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Mirage-2000-electrics

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Mirage-2000-avionics

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Mirage-2000-ecs

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Mirage-2000-fadec

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Mirage-2000-engines-Snecma-M53

---

Mirage-2000-fcs

## Independent variables

### Name

aero/alpha-deg

---

aero/beta-deg

---

aero/pb

---

aero/qb

---

aero/rb

---

fcs/airbrake-lower

---

fcs/airbrake-upper

---

fcs/elevon-1L-pos-deg

---

fcs/elevon-1R-pos-deg

---

fcs/elevon-2L-pos-deg

---

fcs/elevon-2R-pos-deg

---

fcs/rudder-pos-deg

---

fcs/slat-1L-pos-deg

---

fcs/slat-1R-pos-deg

---

fcs/slat-2L-pos-deg

---

fcs/slat-2R-pos-deg

---

gear/gear-pos-norm

---

velocities/mach