

SEPECAT-Jaguar aerodynamic model

Built using VSPAERO; Aerodynamic Datum (8.6247, 0, -0.005)M, 2020-03-19 02:58: Richard Harrison, rjh@zaretto.com, ZDAT/AED/2019/11-01

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AeroDetail=High, ExternalTanks, Flaps, Gear, GroundEffect, Mach, Speedbrake, WakeIterations=3

Model summary

Dependent variable	Independent variables	Axis	Description
CFXB	alpha,beta	DRAG	BASE DRAG
CFXFLAPS	alpha,elevator	DRAG	DRAG DUE TO FLAPS INBOARD
CFXFLAPSOB	alpha,elevator	DRAG	DRAG DUE TO FLAPS OUTBOARD
CFXGEAR	alpha,beta	DRAG	DRAG DUE TO GEAR
CFXDGE	hmrc,alpha	DRAG	DRAG DUE TO GROUND EFFECT
CFXMN	mach,alpha	DRAG	DRAG DUE TO MACH
CFXDRDMN	mach,alpha	DRAG	DRAG DUE TO MACH DUE TO RUDDER DEFLECTION
CFXDRD	alpha,beta	DRAG	DRAG DUE TO RUDDER DEFLECTION
CFDSL	alpha,slats	DRAG	DRAG DUE TO SLATS
CFXBRK	alpha,beta	DRAG	DRAG DUE TO SPEEDBRAKE
CFXDSPL	alpha,beta,spoiler-left	DRAG	DRAG DUE TO SPOILERS LEFT
CFXDSPR	alpha,beta,spoiler-right	DRAG	DRAG DUE TO SPOILERS RIGHT
CFXTANKC	alpha,beta	DRAG	DRAG INCREMENT DUE TO CENTRE TANK
CFXTANKL	alpha,beta	DRAG	DRAG INCREMENT DUE TO LEFT WING TANK
CFXTANKR	alpha,beta	DRAG	DRAG INCREMENT DUE TO RIGHT WING TANK
CFZB	alpha,elevator	LIFT	BASE LIFT
CFZFLAPS	alpha,elevator	LIFT	LIFT DUE TO FLAPS INBOARD
CFZFLAPSOB	alpha,elevator	LIFT	LIFT DUE TO FLAPS OUTBOARD
CFZGEAR	alpha,beta	LIFT	LIFT DUE TO GEAR
CFZDGE	hmrc,alpha	LIFT	LIFT DUE TO GROUND EFFECT
CFZMN	mach,alpha	LIFT	LIFT DUE TO MACH
CFZDRDMN	mach,alpha	LIFT	LIFT DUE TO MACH DUE TO RUDDER DEFLECTION
CFZDRD	alpha,beta	LIFT	LIFT DUE TO RUDDER DEFLECTION
CFZDSL	alpha,slats	LIFT	LIFT DUE TO SLATS
CFZBRK	alpha,beta	LIFT	LIFT DUE TO SPEEDBRAKE
CFZDSPL	alpha,beta,spoiler-left	LIFT	LIFT DUE TO SPOILERS LEFT
CFZDSPR	alpha,beta,spoiler-right	LIFT	LIFT DUE TO SPOILERS RIGHT
CFZTANKC	alpha,elevator	LIFT	LIFT INCREMENT DUE TO CENTRE TANK
CFZTANKL	alpha,elevator	LIFT	LIFT INCREMENT DUE TO LEFT WING TANK
CFZTANKR	alpha,elevator	LIFT	LIFT INCREMENT DUE TO RIGHT WING TANK
CMM1	alpha,elevator	PITCH	BASE PITCHING MOMENT

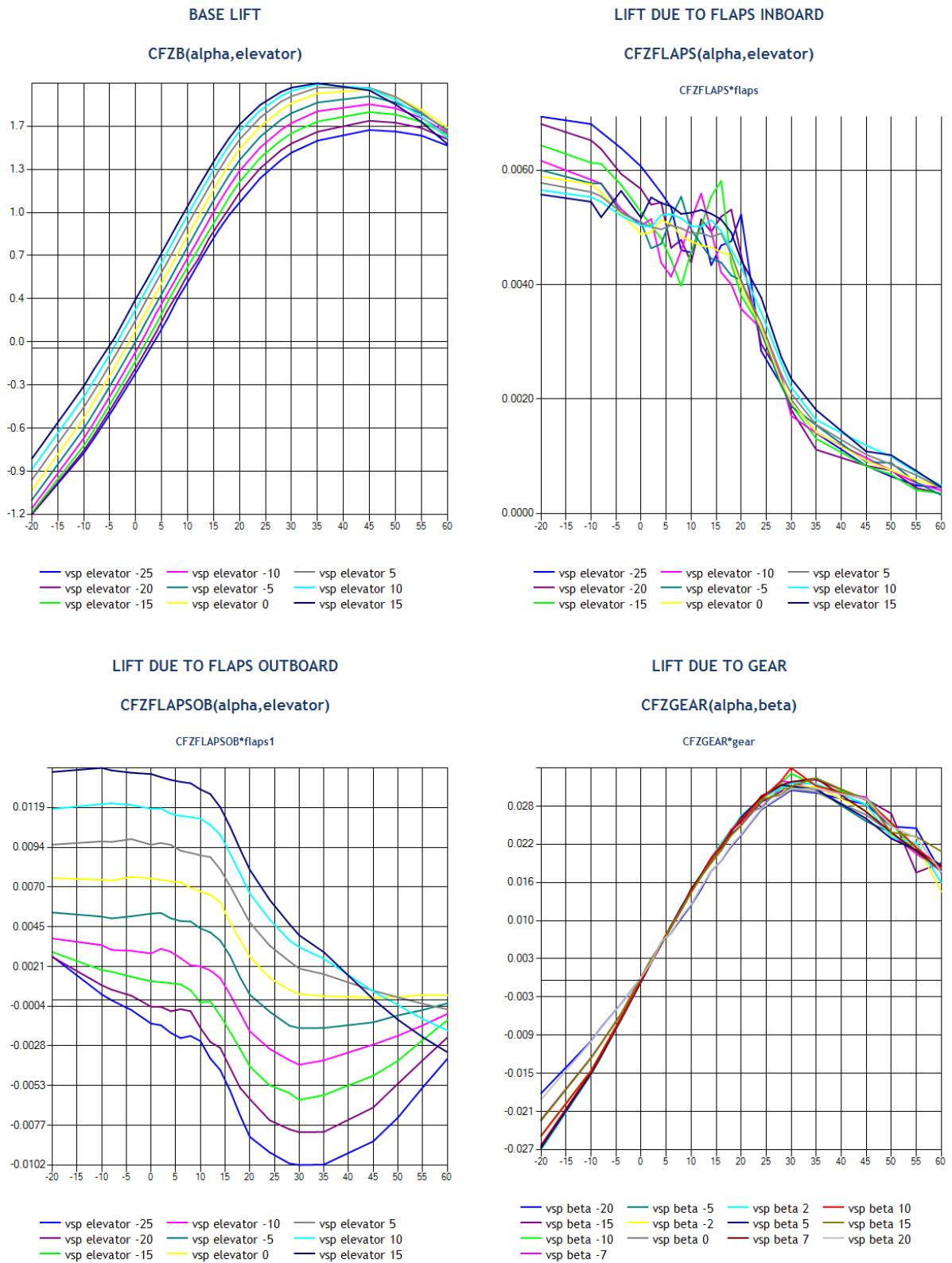
CMMQ	alpha,beta	PITCH	PITCH DAMPING DERIVATIVE
CMMALPHADOT	alpha,beta	PITCH	PITCH DERIVATIVE MOMENT DUE TO ALPHA DOT
CMDRDMN	mach,alpha	PITCH	PITCH MOMENT CHANGE DUE TO MACH DUE TO RUDDER DEFLECTION
CMDRD	alpha,beta	PITCH	PITCH MOMENT DUE TO RUDDER DEFLECTION
CMDSL	alpha,slats	PITCH	PITCH MOMENT DUE TO SLATS
CMMFLAPS	alpha,elevator	PITCH	PITCHING MOMENT DUE TO FLAPS INBOARD
CMMFLAPSOB	alpha,elevator	PITCH	PITCHING MOMENT DUE TO FLAPS OUTBOARD
CMMGEAR	alpha,beta	PITCH	PITCHING MOMENT DUE TO GEAR
CMDGE	hmrc,alpha	PITCH	PITCHING MOMENT DUE TO GROUND EFFECT
CMMMN	mach,alpha	PITCH	PITCHING MOMENT DUE TO MACH
CMBRK	alpha,beta	PITCH	PITCHING MOMENT DUE TO SPEEDBRAKE
CMDSPL	alpha,beta,spoiler-left	PITCH	PITCHING MOMENT DUE TO SPOILERS LEFT
CMDSPR	alpha,beta,spoiler-right	PITCH	PITCHING MOMENT DUE TO SPOILERS RIGHT
CMTANKC	alpha,elevator	PITCH	PITCHING MOMENT INCREMENT DUE TO CENTRE TANK
CMTANKL	alpha,elevator	PITCH	PITCHING MOMENT INCREMENT DUE TO LEFT WING TANK
CMTANKR	alpha,elevator	PITCH	PITCHING MOMENT INCREMENT DUE TO RIGHT WING TANK
CML1	alpha,beta	ROLL	BASE ROLLING MOMENT
CMLP	alpha,beta	ROLL	ROLL DAMPING DERIVATIVE
CMLR	alpha,beta	ROLL	ROLL DERIVATIVE MOMENT DUE TO YAW RATE
CMLDRDMN	mach,alpha	ROLL	ROLL MOMENT CHANGE DUE TO MACH DUE TO RUDDER DEFLECTION
CMLBETADOT	alpha,beta	ROLL	ROLL MOMENT DERIVATIVE FOR BETA DOT
CMLDTD	alpha,elevator	ROLL	ROLL MOMENT DUE TO DIFFERENTIAL TAIL DEFLECTION
CMLGEAR	alpha,beta	ROLL	ROLL MOMENT DUE TO GEAR
CMLMN	mach,alpha	ROLL	ROLL MOMENT DUE TO MACH
CMLRD	alpha,beta	ROLL	ROLL MOMENT DUE TO RUDDER DEFLECTION
CMLDSL	alpha,slats	ROLL	ROLL MOMENT DUE TO SLATS
CMLDSPL	alpha,beta,spoiler-left	ROLL	ROLL MOMENT DUE TO SPOILERS LEFT
CMLDSPR	alpha,beta,spoiler-right	ROLL	ROLL MOMENT DUE TO SPOILERS RIGHT
CMLTANKC	alpha,beta	ROLL	ROLLING MOMENT INCREMENT DUE TO CENTRE TANK
CMLTANKL	alpha,beta	ROLL	ROLLING MOMENT INCREMENT DUE TO LEFT WING TANK
CMLTANKR	alpha,beta	ROLL	ROLLING MOMENT INCREMENT DUE TO RIGHT WING TANK
CFYB	alpha,beta,elevator	SIDE	BASE SIDEFORCE
CFYP	alpha,beta	SIDE	SIDE FORCE DERIVATIVE MOMENT DUE TO ROLL RATE
CFYR	alpha,beta	SIDE	SIDE FORCE DERIVATIVE MOMENT DUE TO YAW RATE
CFYDTD	alpha,elevator	SIDE	SIDE FORCE DUE TO DIFFERENTIAL TAIL DEFLECTION
CYDRD	alpha,beta	SIDE	SIDE FORCE DUE TO RUDDER DEFLECTION
CYDSL	alpha,slats	SIDE	SIDE FORCE DUE TO SLATS
CYDRDMN	mach,alpha	SIDE	SIDEFORCE CHANGE DUE TO MACH DUE TO RUDDER DEFLECTION

CFYGEAR	alpha	SIDE	SIDEFORCE DUE TO GEAR
CFYMN	mach,alpha	SIDE	SIDEFORCE DUE TO MACH
CFYDSPL	alpha,beta,spoiler-left	SIDE	SIDEFORCE DUE TO SPOILERS LEFT
CFYDSPR	alpha,beta,spoiler-right	SIDE	SIDEFORCE DUE TO SPOILERS RIGHT
CFYTANKC	alpha,beta,elevator	SIDE	SIDEFORCE INCREMENT DUE TO CENTRE TANK
CFYTANKL	alpha,beta,elevator	SIDE	SIDEFORCE INCREMENT DUE TO LEFT WING TANK
CFYTANKR	alpha,beta,elevator	SIDE	SIDEFORCE INCREMENT DUE TO RIGHT WING TANK
CMN1	alpha,beta,elevator	YAW	BASE YAWING MOMENT
CMNR	alpha,beta	YAW	YAW DAMPING DERIVATIVE
CMNBETADOT	alpha,beta	YAW	YAW DERIVATIVE MOMENT DUE TO BETADOT
CMNP	alpha,beta	YAW	YAW DERIVATIVE MOMENT DUE TO ROLL RATE
CMNDRDMN	mach,alpha	YAW	YAWING MOMENT CHANGE DUE TO MACH DUE TO RUDDER DEFLECTION
CMNDTD	alpha,elevator	YAW	YAWING MOMENT DUE TO DIFFERENTIAL TAIL DEFLECTION
CMNGEAR	alpha,beta	YAW	YAWING MOMENT DUE TO GEAR
CMNMN	mach,alpha	YAW	YAWING MOMENT DUE TO MACH
CMNDRD	alpha,beta	YAW	YAWING MOMENT DUE TO RUDDER DEFLECTION
CMNDSP	alpha,beta,spoiler-left	YAW	YAWING MOMENT DUE TO SPOILERS LEFT
CMNDSPR	alpha,beta,spoiler-right	YAW	YAWING MOMENT DUE TO SPOILERS RIGHT
CMNTANKC	alpha,beta,elevator	YAW	YAWING MOMENT INCREMENT DUE TO CENTRE TANK
CMNTANKL	alpha,beta,elevator	YAW	YAWING MOMENT INCREMENT DUE TO LEFT WING TANK
CMNTANKR	alpha,beta,elevator	YAW	YAWING MOMENT INCREMENT DUE TO RIGHT WING TANK

Coefficient Buildup

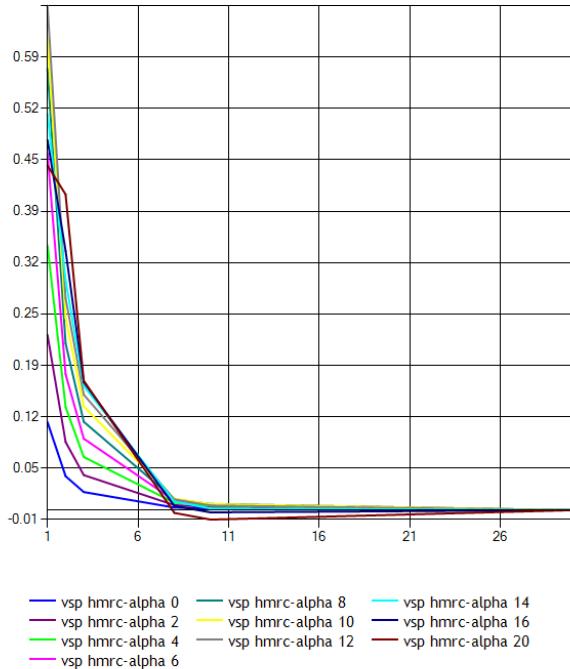
Axis	Buildup
DRAG	CFXB + CFXDSPL + CFXDSPR + CFXDRD*rudder + CFXDSL + CFXTANKC*TANKC + CFXTANKL*TANKL + CFXTANKR*TANKR + CFXBRK*speedbrake + CFXGEAR*gear + CFXFLAPS*flaps + CFXFLAPSOB*flaps1 + CFXDGE + CFXMN + CFXDRDMN*rudder
ROLL	CML1 + CMLDSPL + CMLDSPR + CMLDRD*rudder + CMLDSL*beta + CMLTANKC*TANKC + CMLTANKL*TANKL + CMLTANKR*TANKR + CMLGEAR*gear + CMLDTD*DTALD + CMLMN + CMLDRDMN*rudder + CMLBETADOT*BETADOT-L + CMLP*PB + CMLR*RB
SIDE	CFYDSPL + CFYDSPR + CYDRD*rudder + CYDSL*beta + CFYTANKC*TANKC + CFYTANKL*TANKL + CFYTANKR*TANKR + CFYGEAR*gear*beta + CFYB + CFYDTD*DTALD + CFYMN + CYDRDMN*rudder + CFYP*PB + CFYR*RB
LIFT	CFZDSPL + CFZDSPR + CFZDRD*rudder + CFZDSL + CFZTANKC*TANKC + CFZTANKL*TANKL + CFZTANKR*TANKR + CFZBRK*speedbrake + CFZGEAR*gear + CFZFLAPS*flaps + CFZFLAPSOB*flaps1 + CFZB + CFZDGE + CFZMN + CFZDRDMN*rudder
PITCH	CMMDSPL + CMMDSPR + CMMRD*rudder + CMMDSL + CMMTANKC*TANKC + CMMTANKL*TANKL + CMMTANKR*TANKR + CMMBRK*speedbrake + CMMGEAR*gear + CMMFLAPS*flaps + CMMFLAPSOB*flaps1 + CMM1 + CMMGE + CMMMN + CMMRD*rudder + CMMALPHADOT*ALPHADOT-L + CMMQ*QB
YAW	CMNDSP + CMNDSPR + CMNDRD*rudder + CMNTANKC*TANKC + CMNTANKL*TANKL + CMNTANKR*TANKR + CMNGEAR*gear + CMN1 + CMNDTD*DTALD + CMNMN + CMNDRDMN*rudder + CMNBETADOT*BETADOT-L + CMNR*RB + CMNP*PB

LIFT



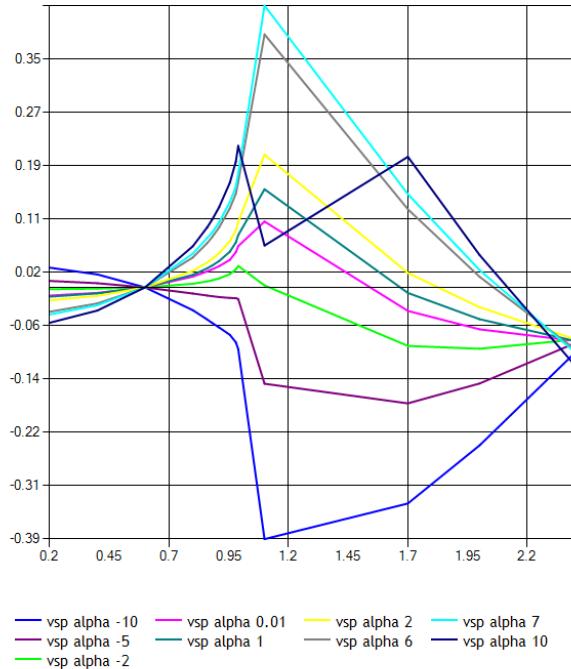
LIFT DUE TO GROUND EFFECT

CFZDGE(hmrc,hmrc-alpha)



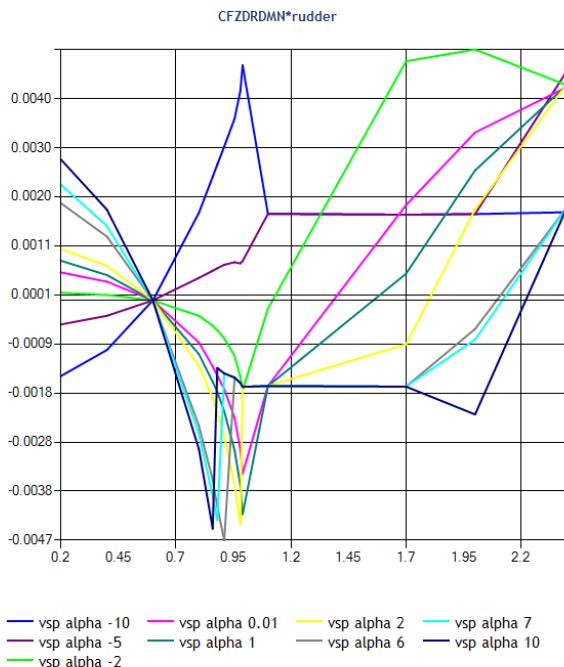
LIFT DUE TO MACH

CFZMN(mach,alpha)



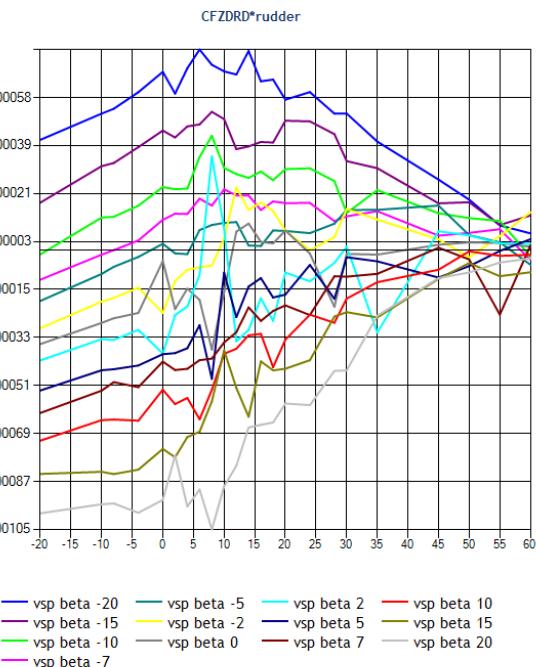
LIFT DUE TO MACH DUE TO RUDDER DEFLECTION

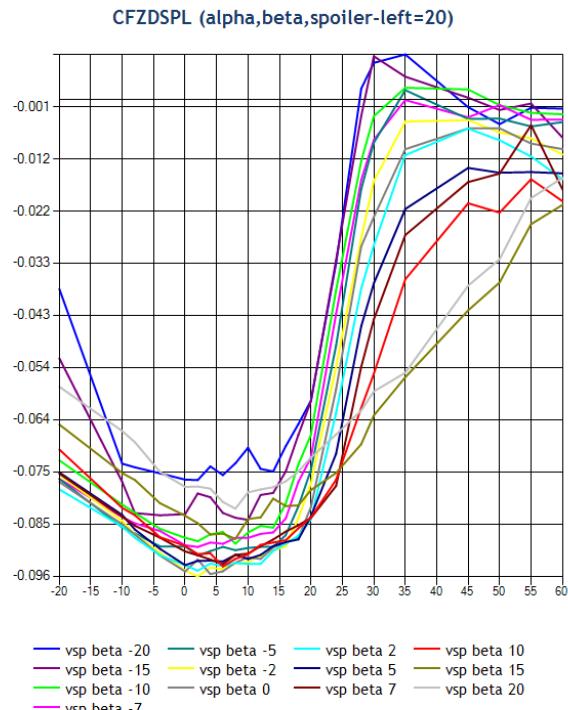
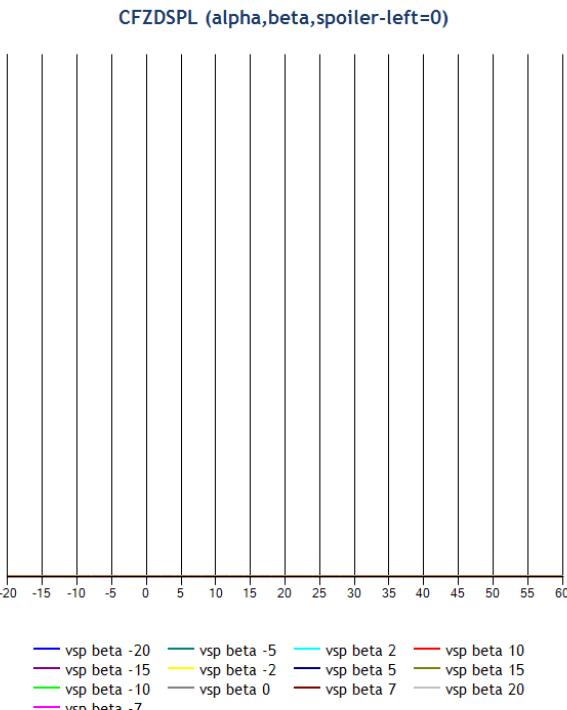
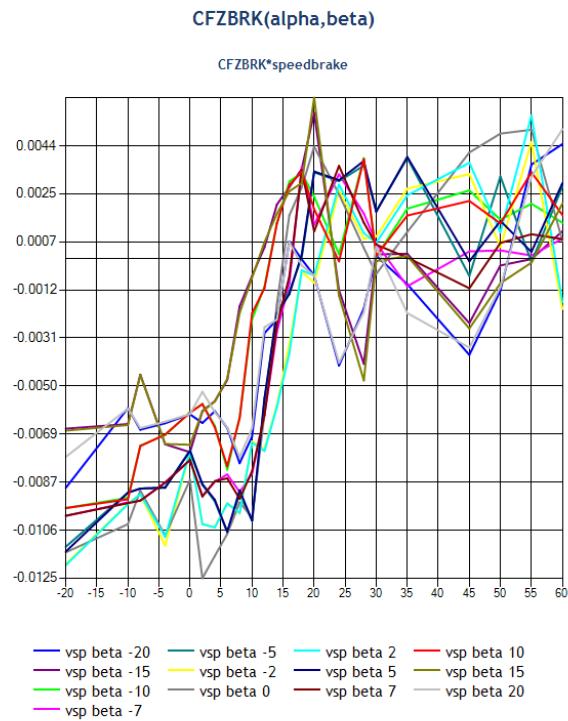
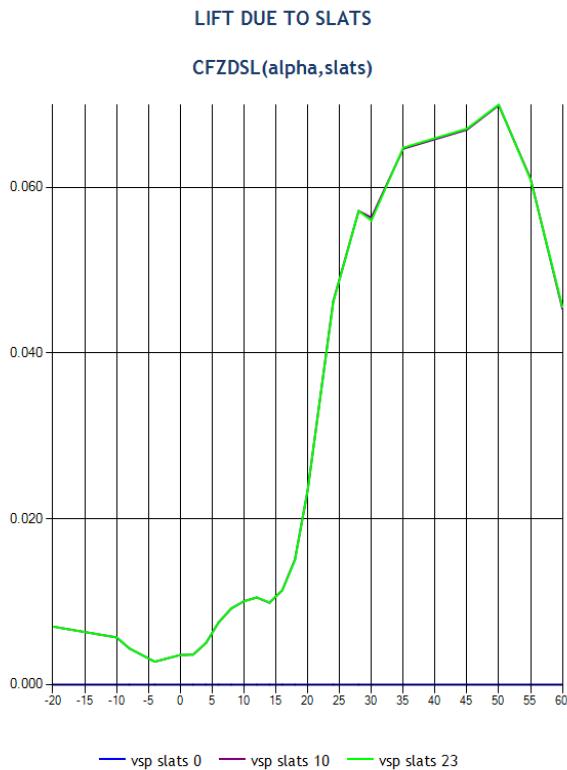
CFZDRDMN(mach,alpha)



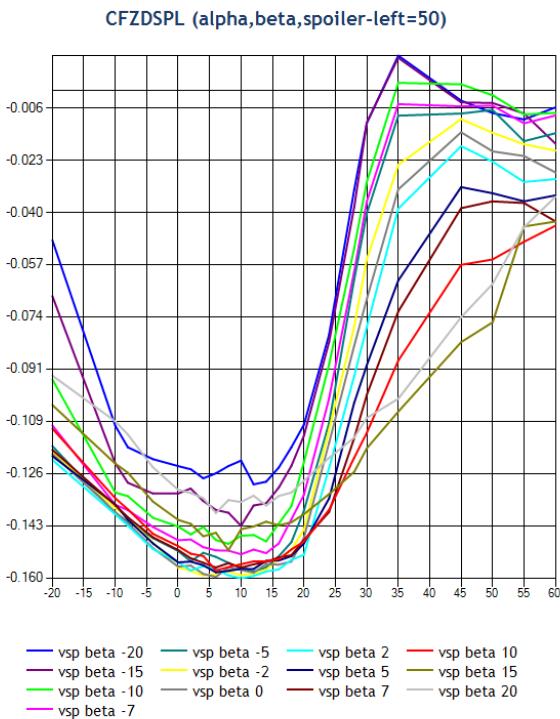
LIFT DUE TO RUDDER DEFLECTION

CFZDRD(alpha,beta)

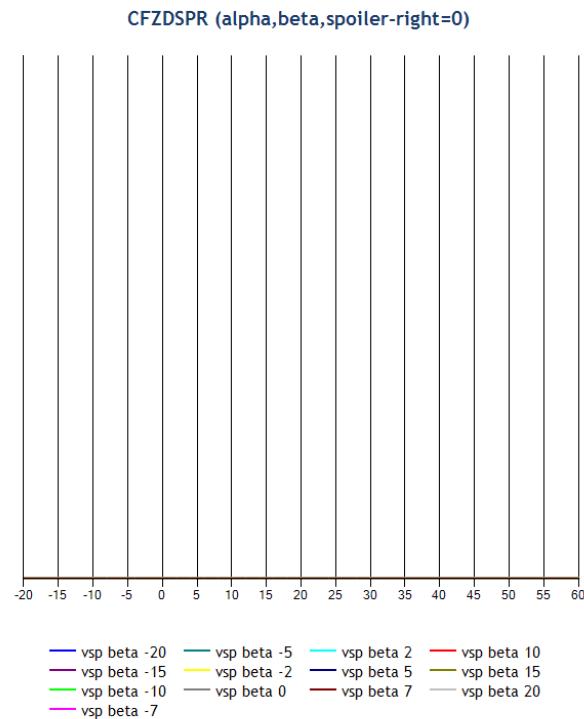




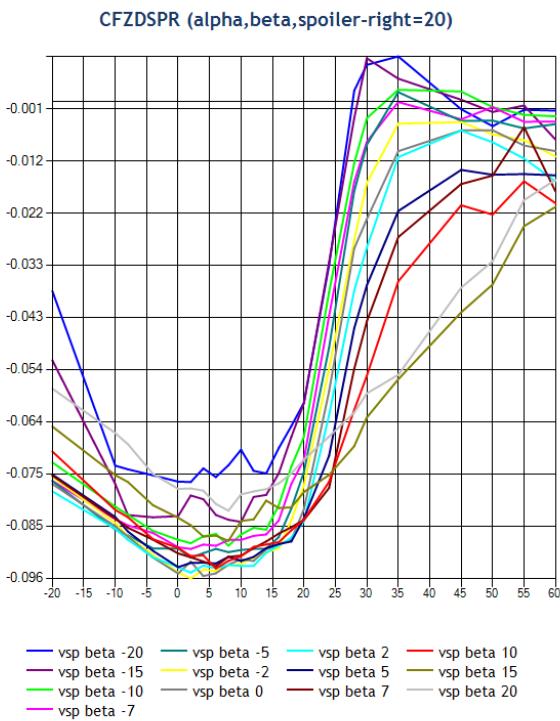
LIFT DUE TO SPOILERS LEFT



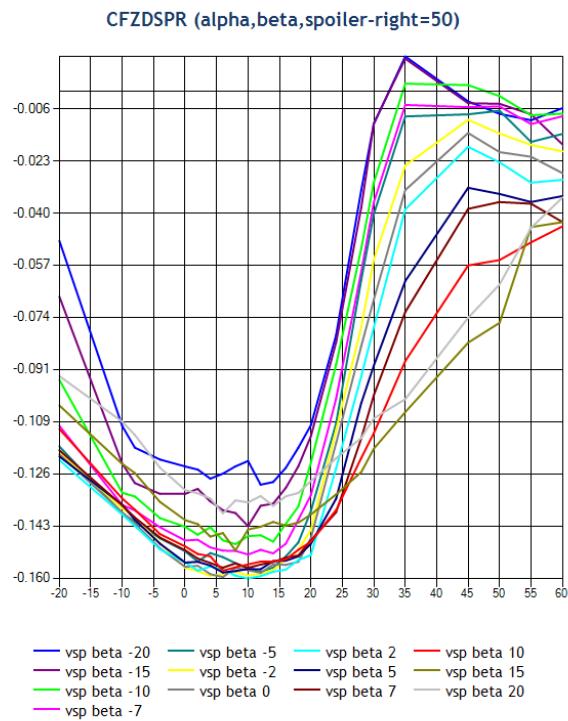
LIFT DUE TO SPOILERS RIGHT



LIFT DUE TO SPOILERS RIGHT



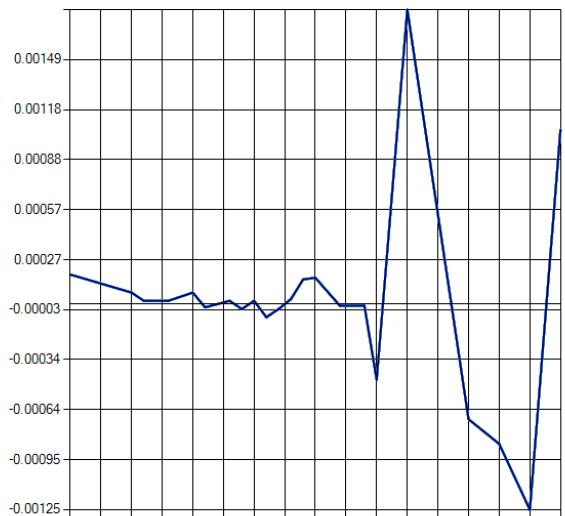
LIFT DUE TO SPOILERS RIGHT



LIFT INCREMENT DUE TO CENTRE TANK

CFZTANKC(alpha,elevator)

CFZTANKC*TANKC

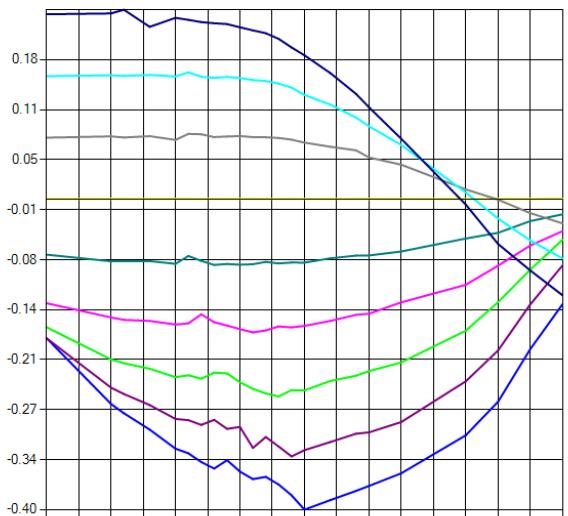


— vsp elevator -25 — vsp elevator -10 — vsp elevator 5
 — vsp elevator -20 — vsp elevator -5 — vsp elevator 10
 — vsp elevator -15 — vsp elevator 0 — vsp elevator 15

LIFT INCREMENT DUE TO LEFT WING TANK

CFZTANKL(alpha,elevator)

CFZTANKL*TANKL

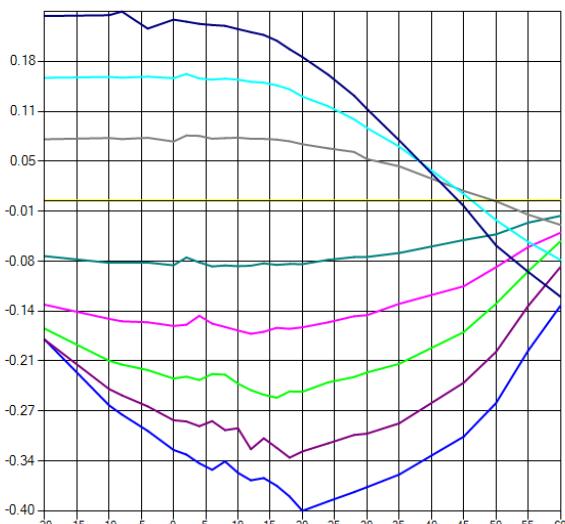


— vsp elevator -25 — vsp elevator -10 — vsp elevator 5
 — vsp elevator -20 — vsp elevator -5 — vsp elevator 10
 — vsp elevator -15 — vsp elevator 0 — vsp elevator 15

LIFT INCREMENT DUE TO RIGHT WING TANK

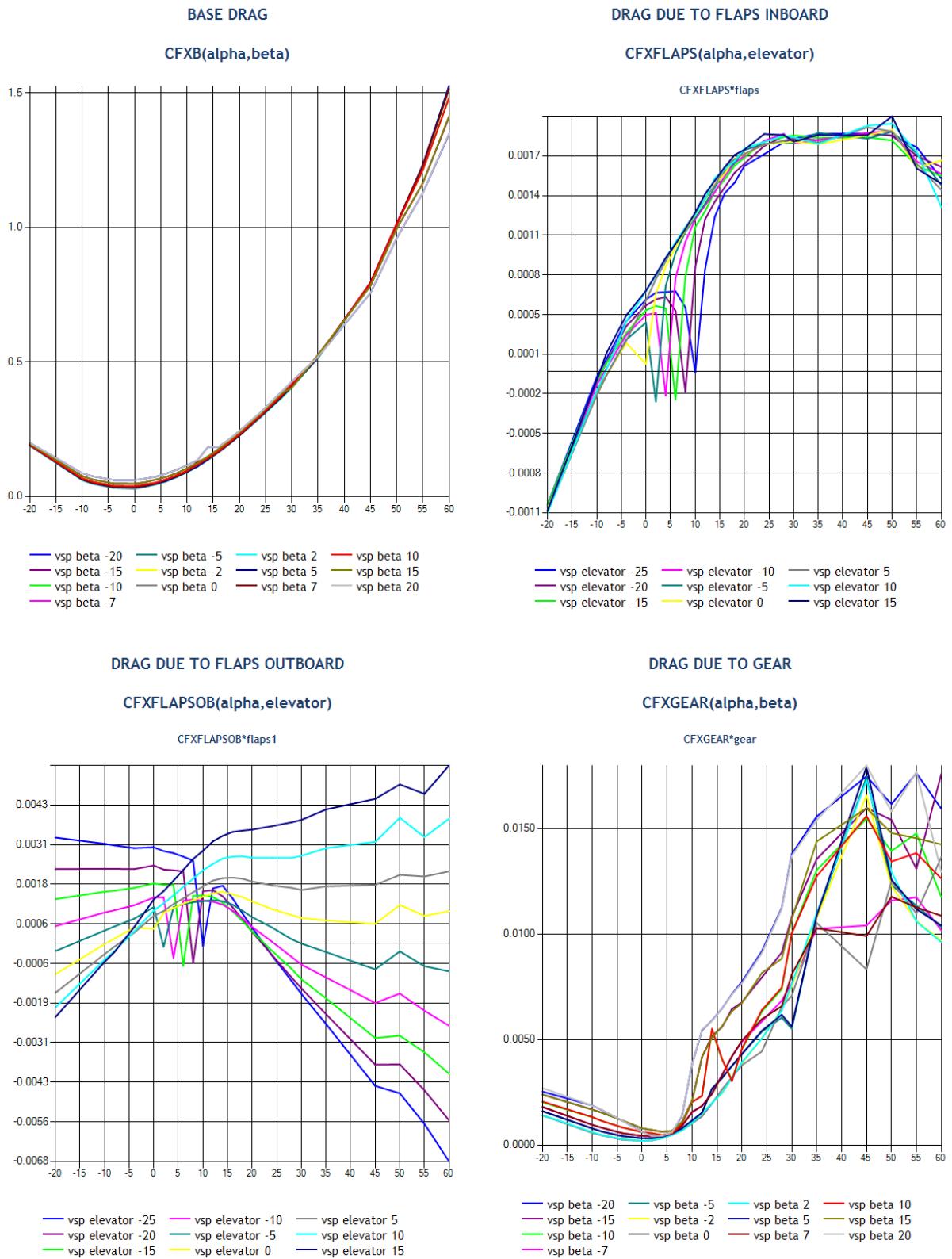
CFZTANKR(alpha,elevator)

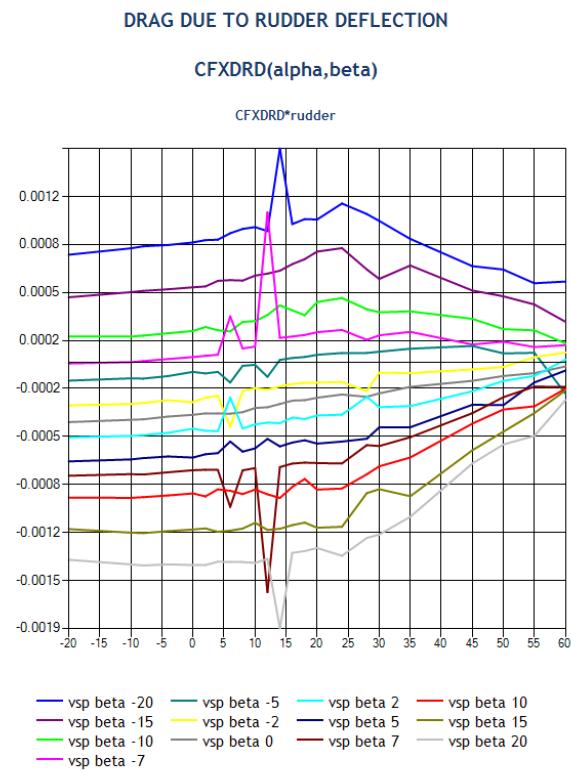
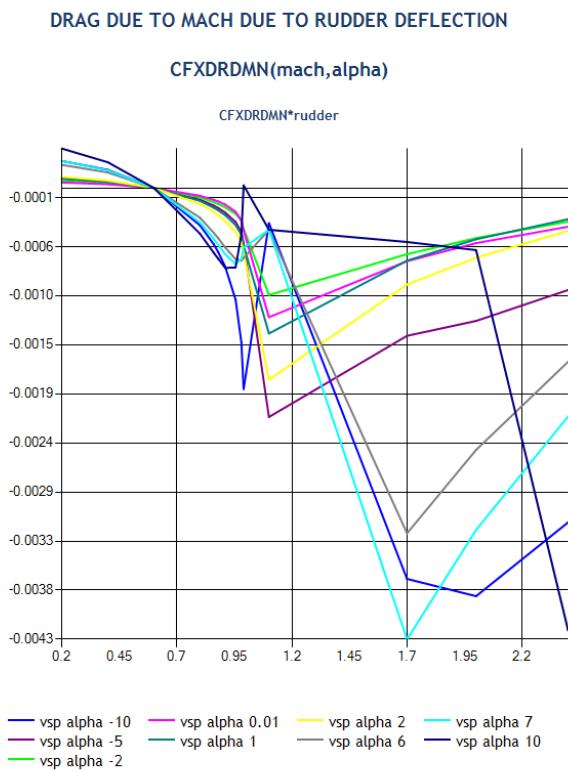
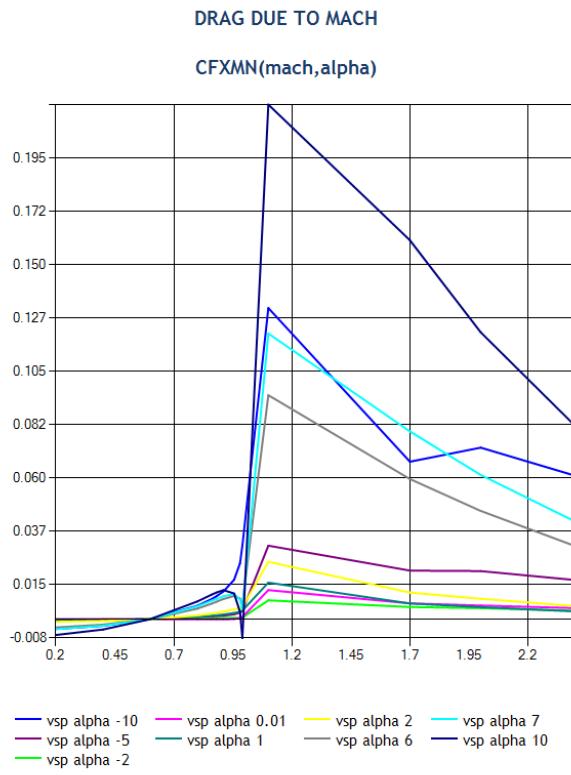
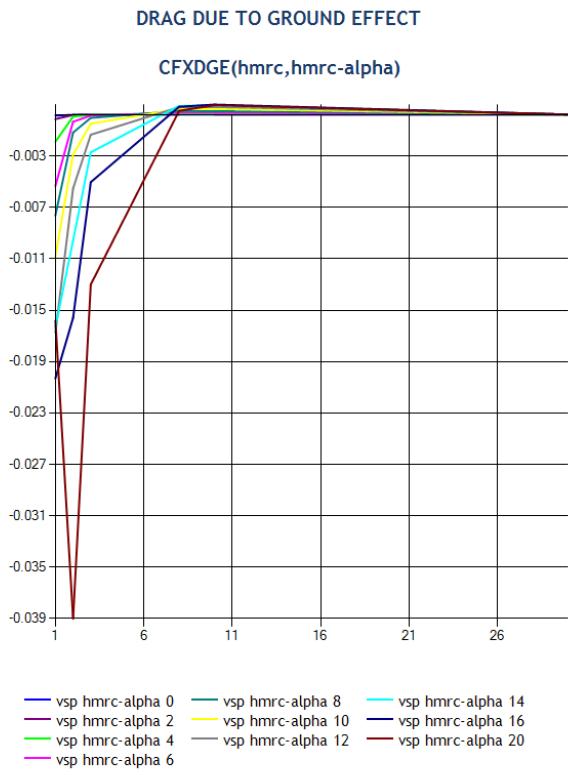
CFZTANKR*TANKR

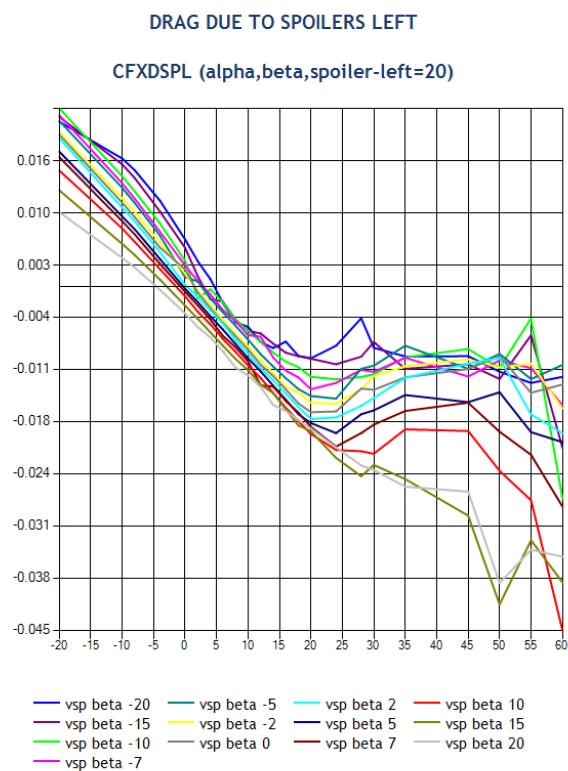
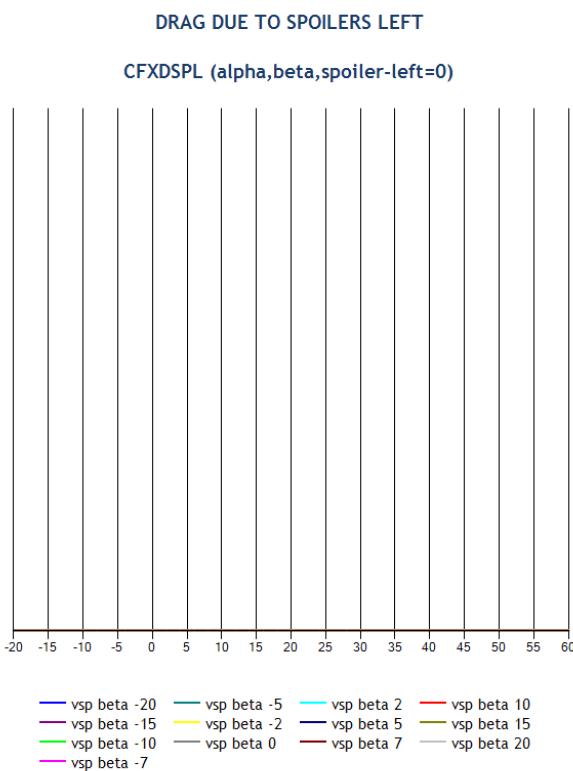
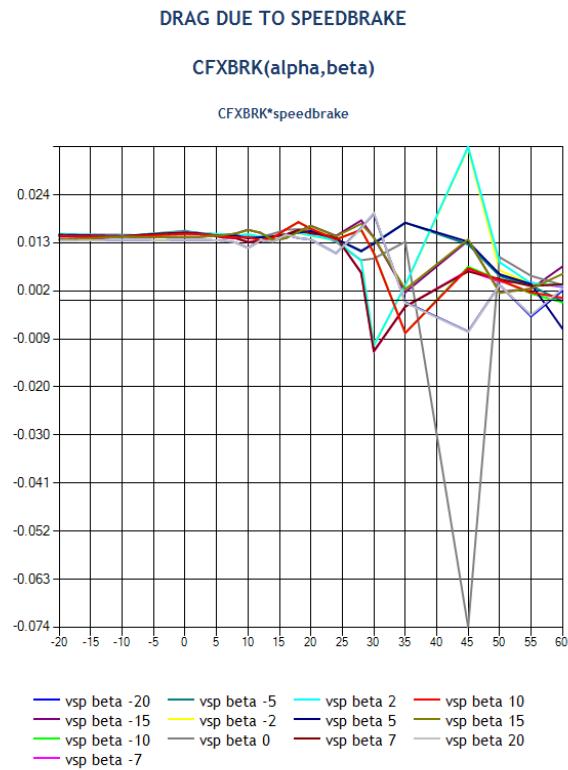
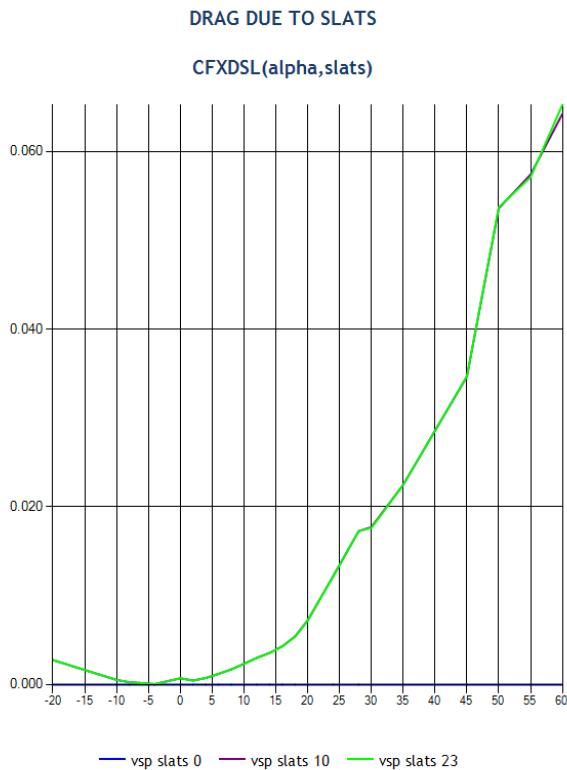


— vsp elevator -25 — vsp elevator -10 — vsp elevator 5
 — vsp elevator -20 — vsp elevator -5 — vsp elevator 10
 — vsp elevator -15 — vsp elevator 0 — vsp elevator 15

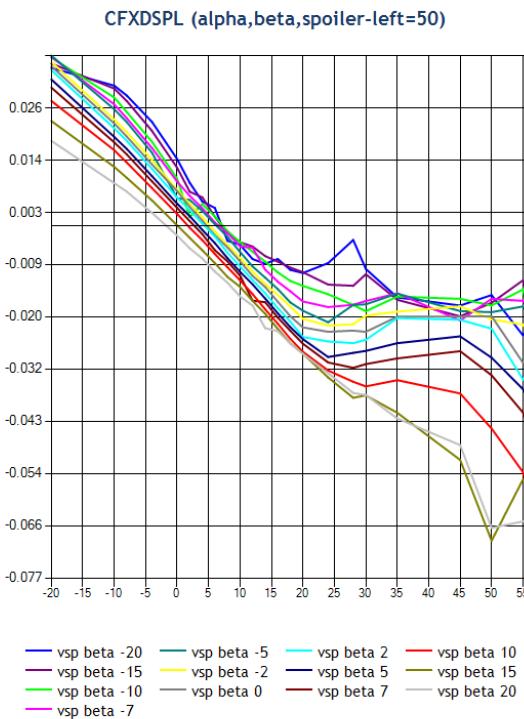
DRAG



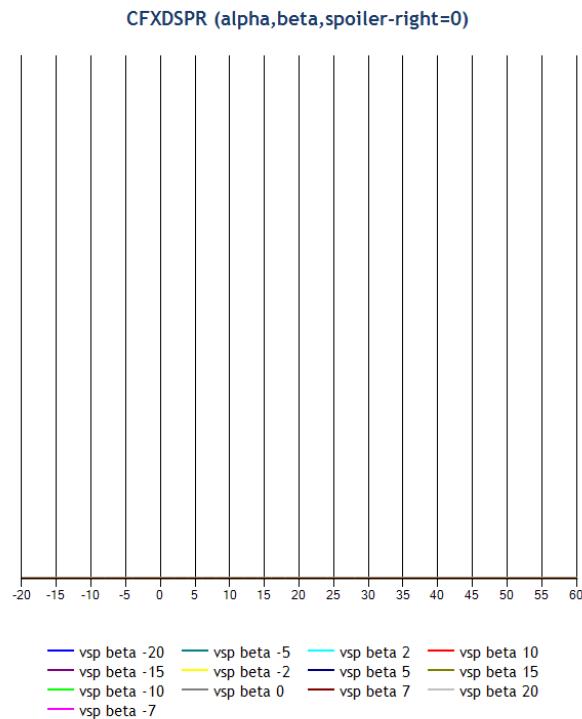




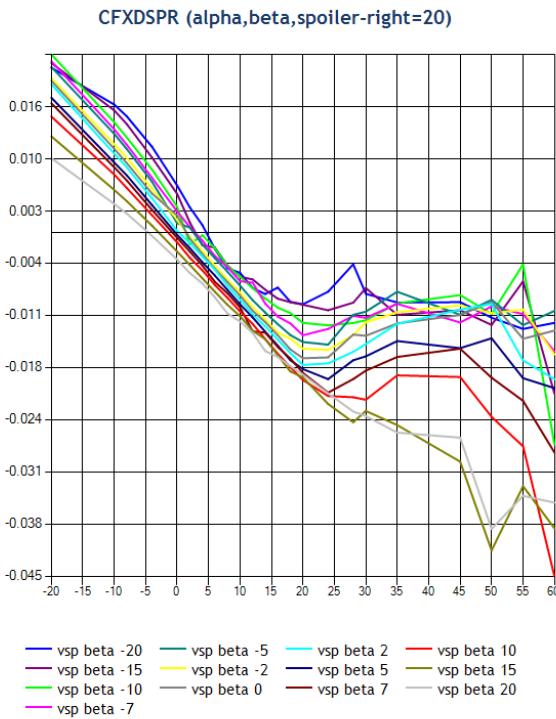
DRAG DUE TO SPOILERS LEFT



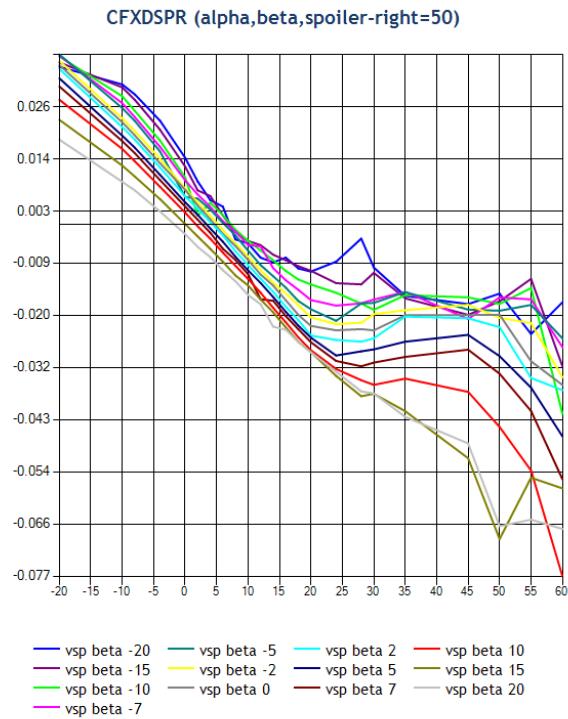
DRAG DUE TO SPOILERS RIGHT



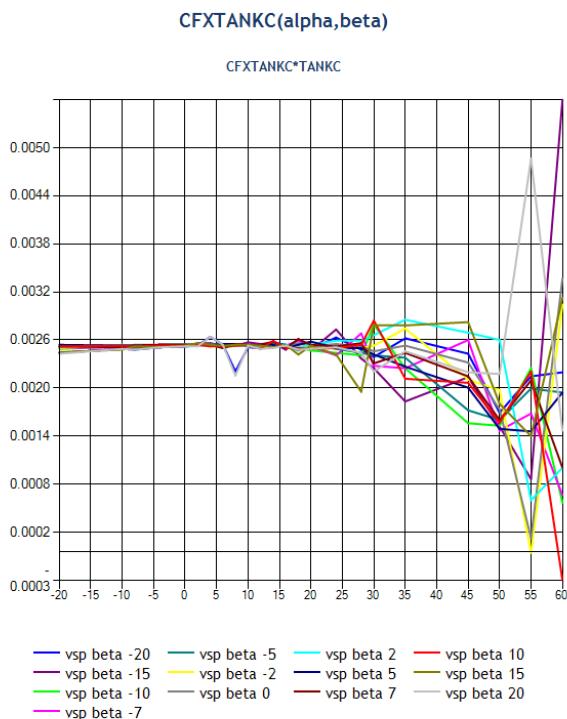
DRAG DUE TO SPOILERS RIGHT



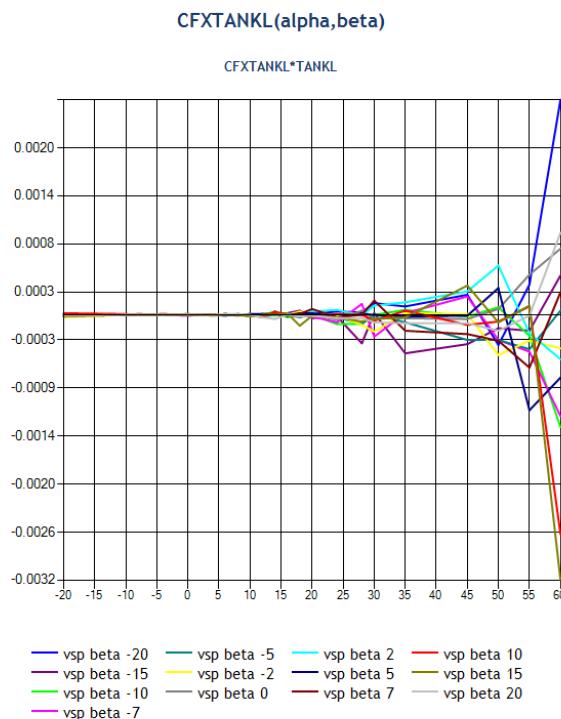
DRAG DUE TO SPOILERS RIGHT



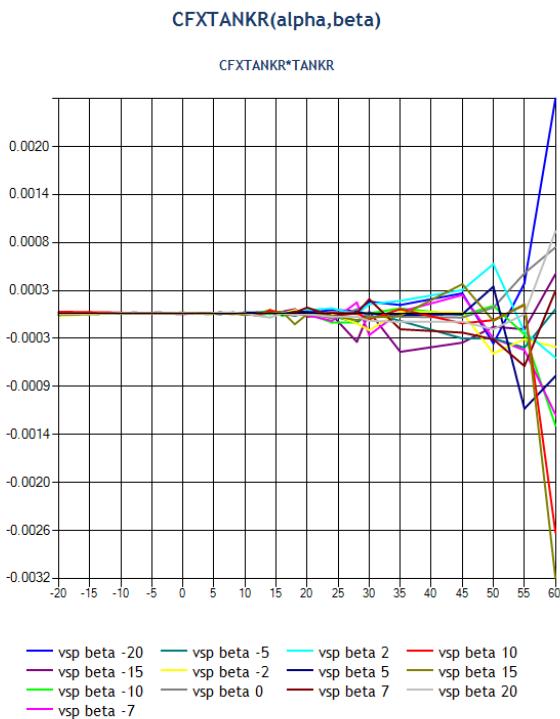
DRAG INCREMENT DUE TO CENTRE TANK



DRAG INCREMENT DUE TO LEFT WING TANK



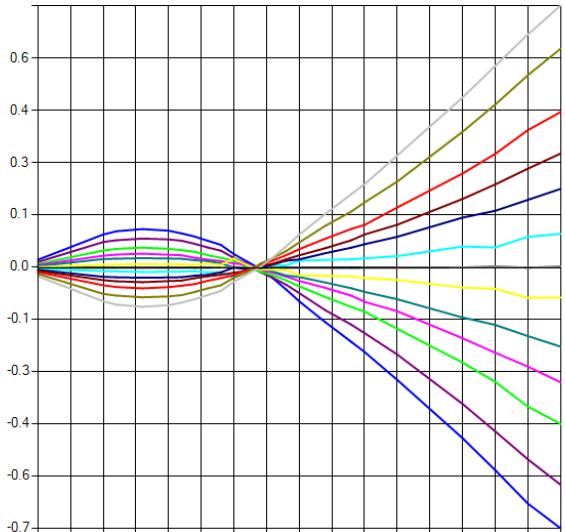
DRAG INCREMENT DUE TO RIGHT WING TANK



SIDE

BASE SIDEFORCE

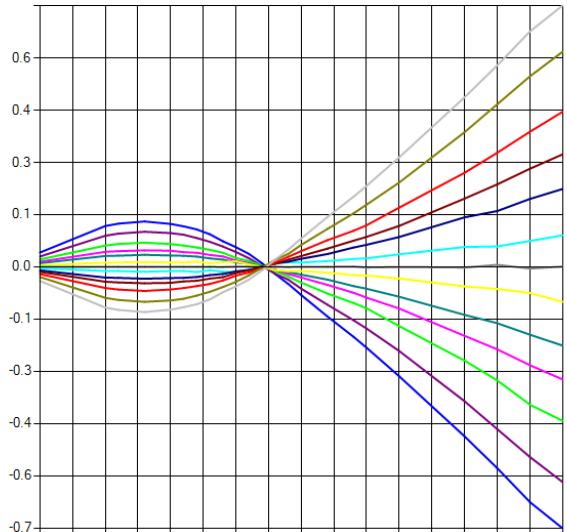
CFYB (alpha,beta,elevator=-25)



vsp beta -20	vsp beta -5	vsp beta 2	vsp beta 10
vsp beta -15	vsp beta -2	vsp beta 5	vsp beta 15
vsp beta -10	vsp beta 0	vsp beta 7	vsp beta 20
vsp beta -7			

BASE SIDEFORCE

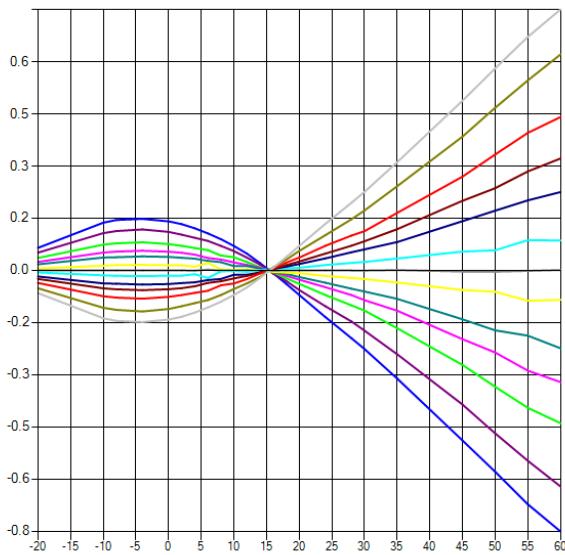
CFYB (alpha,beta,elevator=-20)



vsp beta -20	vsp beta -5	vsp beta 2	vsp beta 10
vsp beta -15	vsp beta -2	vsp beta 5	vsp beta 15
vsp beta -10	vsp beta 0	vsp beta 7	vsp beta 20
vsp beta -7			

BASE SIDEFORCE

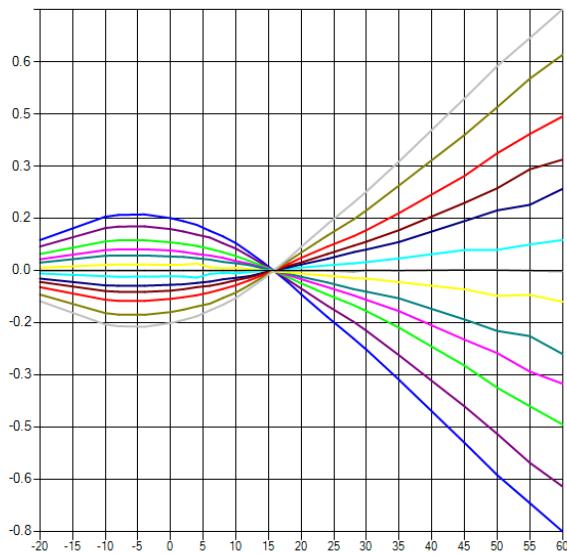
CFYB (alpha,beta,elevator=-15)



vsp beta -20	vsp beta -5	vsp beta 2	vsp beta 10
vsp beta -15	vsp beta -2	vsp beta 5	vsp beta 15
vsp beta -10	vsp beta 0	vsp beta 7	vsp beta 20
vsp beta -7			

BASE SIDEFORCE

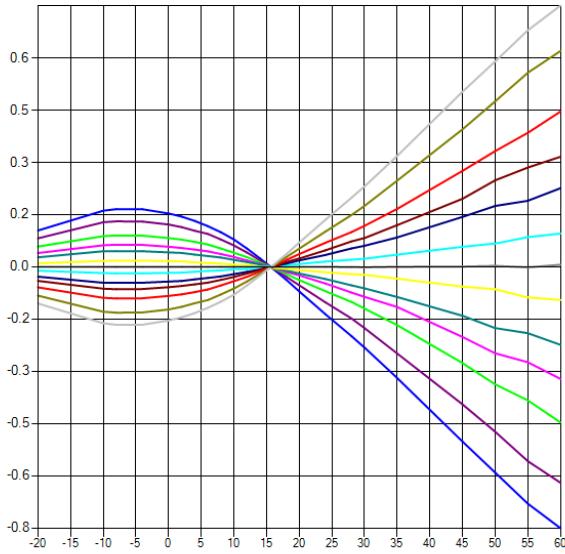
CFYB (alpha,beta,elevator=-10)



vsp beta -20	vsp beta -5	vsp beta 2	vsp beta 10
vsp beta -15	vsp beta -2	vsp beta 5	vsp beta 15
vsp beta -10	vsp beta 0	vsp beta 7	vsp beta 20
vsp beta -7			

BASE SIDEFORCE

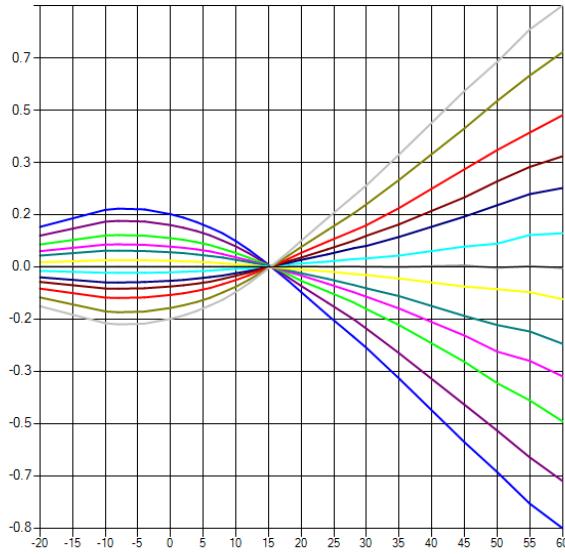
CFYB (alpha,beta,elevator=-5)



vsp beta -20	vsp beta -5	vsp beta 2	vsp beta 10
vsp beta -15	vsp beta -2	vsp beta 5	vsp beta 15
vsp beta -10	vsp beta 0	vsp beta 7	vsp beta 20
vsp beta -7			

BASE SIDEFORCE

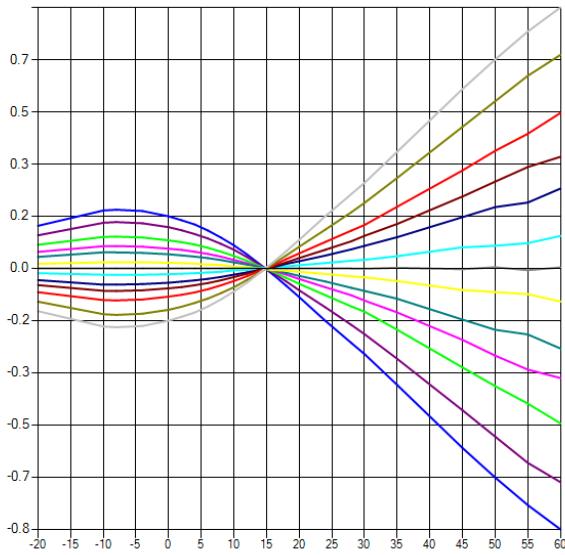
CFYB (alpha,beta,elevator=0)



vsp beta -20	vsp beta -5	vsp beta 2	vsp beta 10
vsp beta -15	vsp beta -2	vsp beta 5	vsp beta 15
vsp beta -10	vsp beta 0	vsp beta 7	vsp beta 20
vsp beta -7			

BASE SIDEFORCE

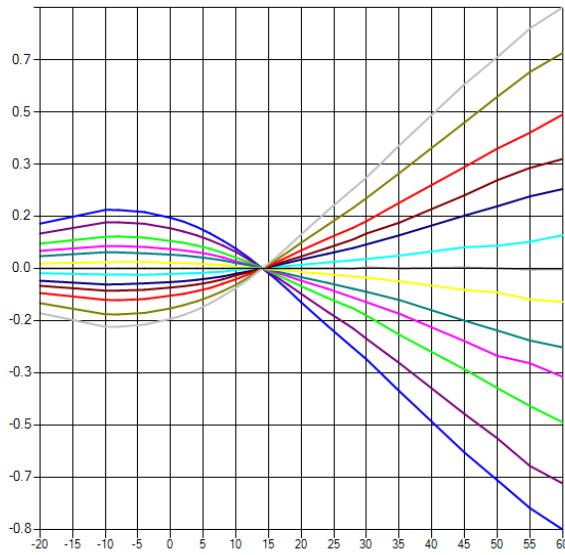
CFYB (alpha,beta,elevator=5)



vsp beta -20	vsp beta -5	vsp beta 2	vsp beta 10
vsp beta -15	vsp beta -2	vsp beta 5	vsp beta 15
vsp beta -10	vsp beta 0	vsp beta 7	vsp beta 20
vsp beta -7			

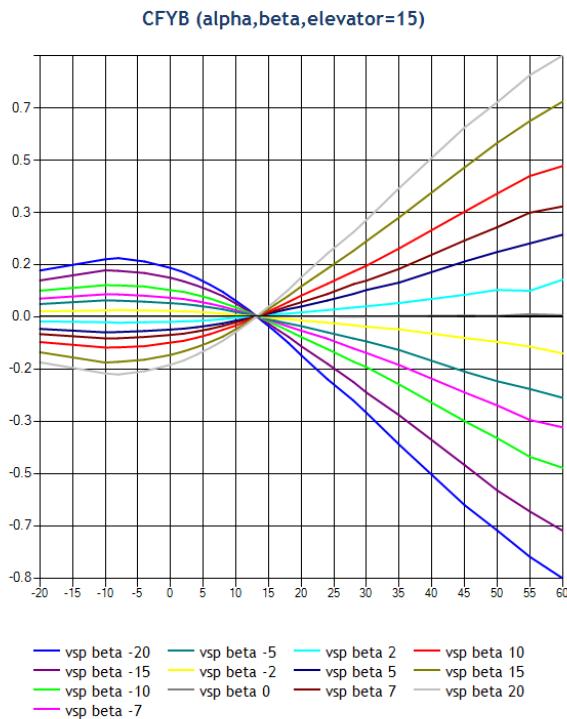
BASE SIDEFORCE

CFYB (alpha,beta,elevator=10)

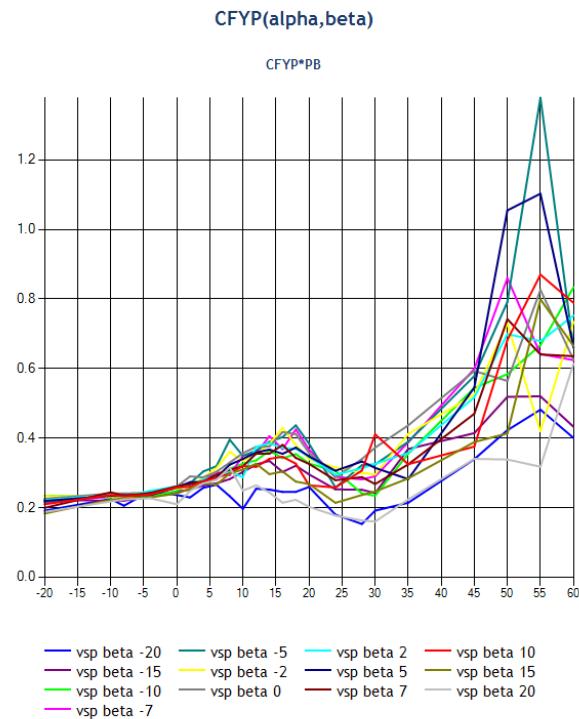


vsp beta -20	vsp beta -5	vsp beta 2	vsp beta 10
vsp beta -15	vsp beta -2	vsp beta 5	vsp beta 15
vsp beta -10	vsp beta 0	vsp beta 7	vsp beta 20
vsp beta -7			

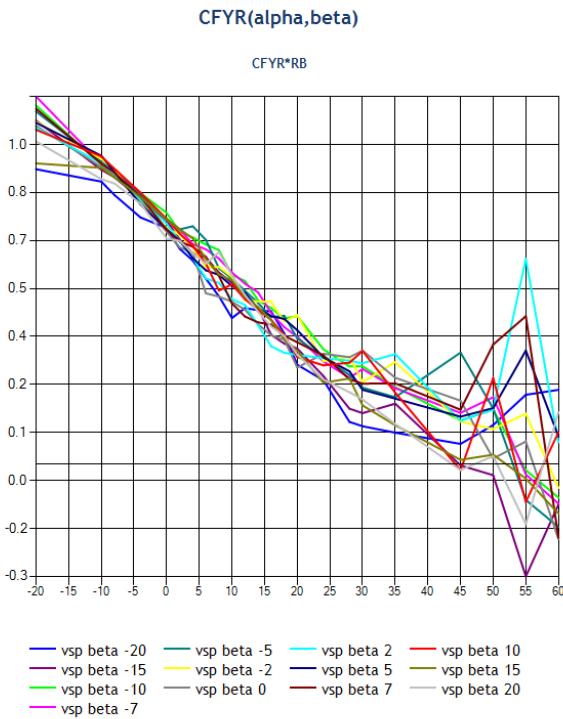
BASE SIDEFORCE



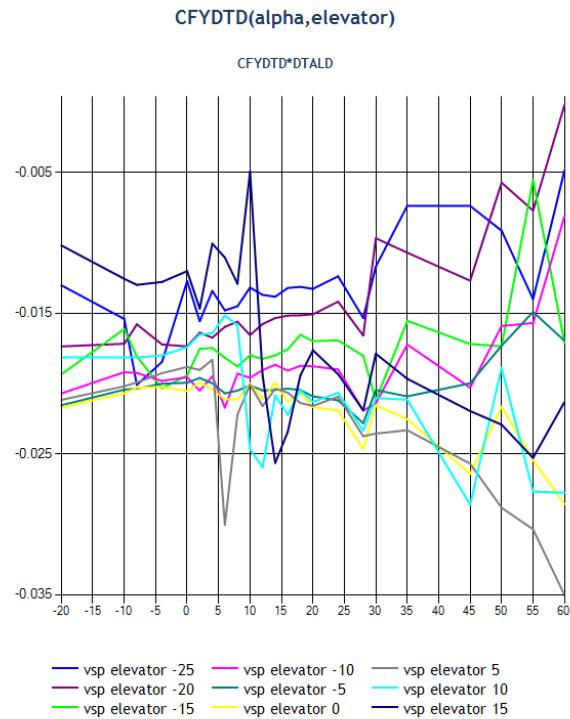
SIDE FORCE DERIVATIVE MOMENT DUE TO ROLL RATE



SIDE FORCE DERIVATIVE MOMENT DUE TO YAW RATE



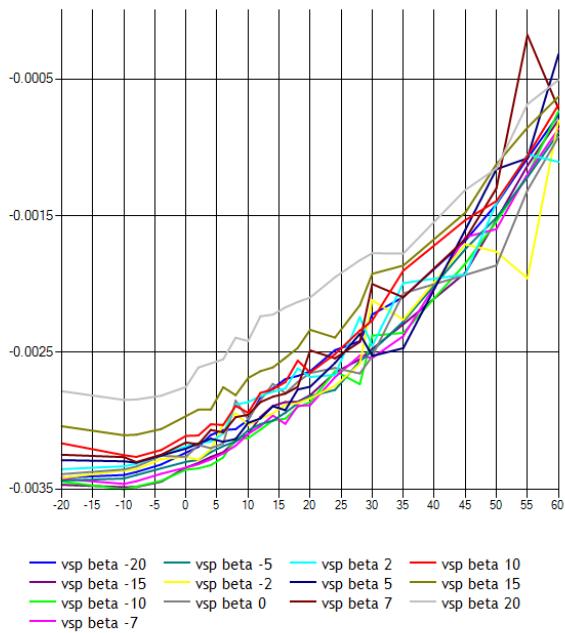
SIDE FORCE DUE TO DIFFERENTIAL TAIL DEFLECTION



SIDE FORCE DUE TO RUDDER DEFLECTION

CYDRD(alpha,beta)

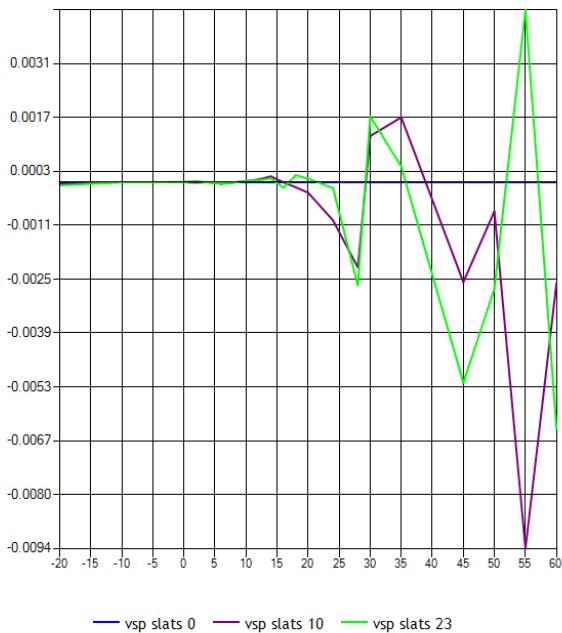
CYDRD*rudder



SIDE FORCE DUE TO SLATS

CYDSL(alpha,slats)

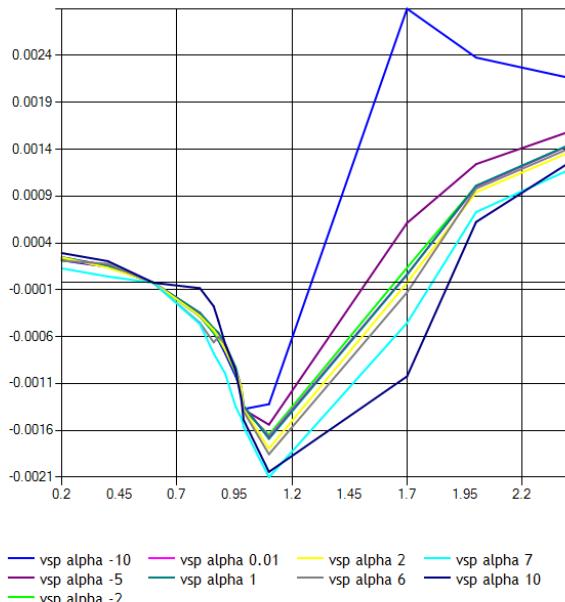
CYDSL*beta



SIDEFORCE CHANGE DUE TO MACH DUE TO RUDDER DEFLECTION

CYDRDMN(mach,alpha)

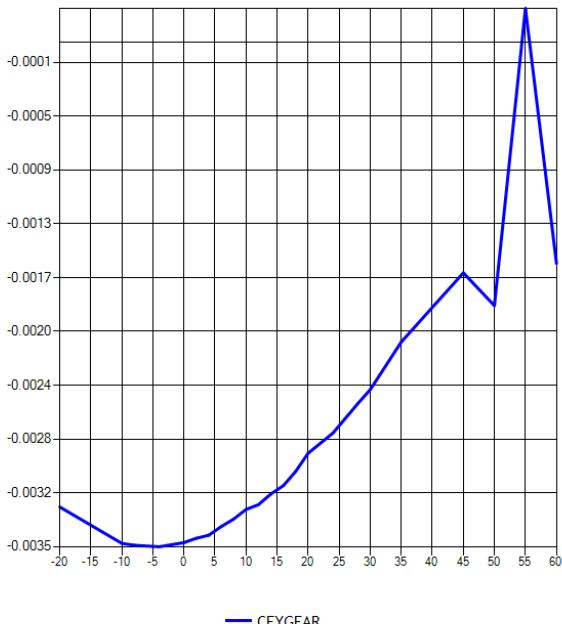
CYDRDMN*rudder



SIDEFORCE DUE TO GEAR

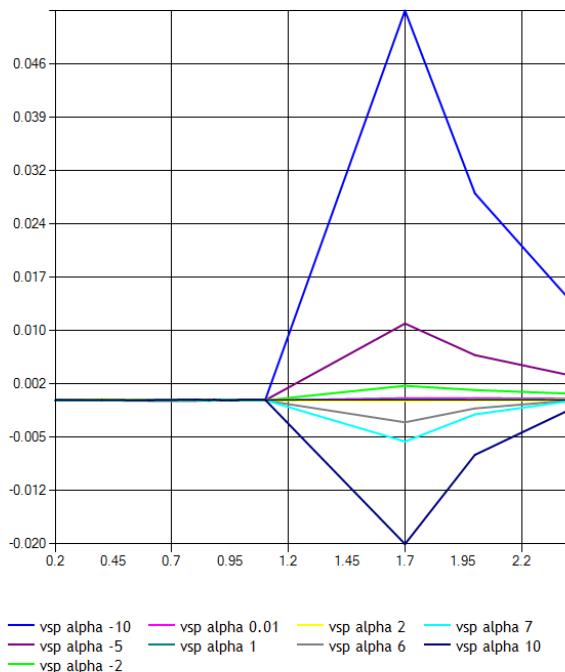
CFYGEAR(alpha)

CFYGEAR*gear*beta



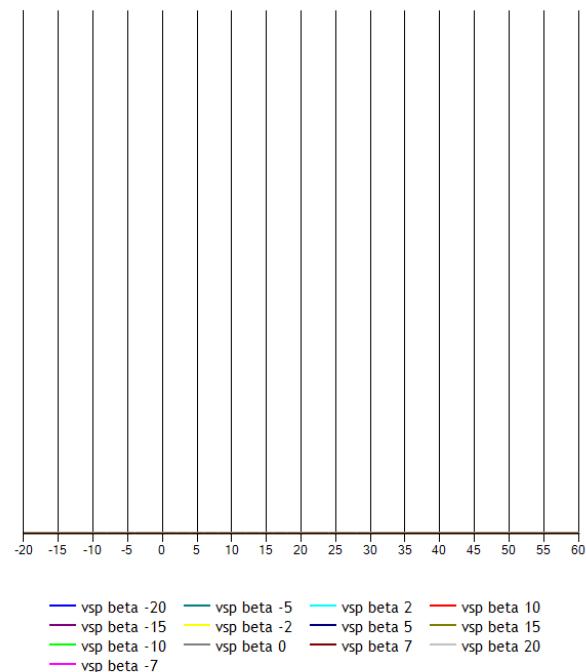
SIDEFORCE DUE TO MACH

CFYMN(mach,alpha)



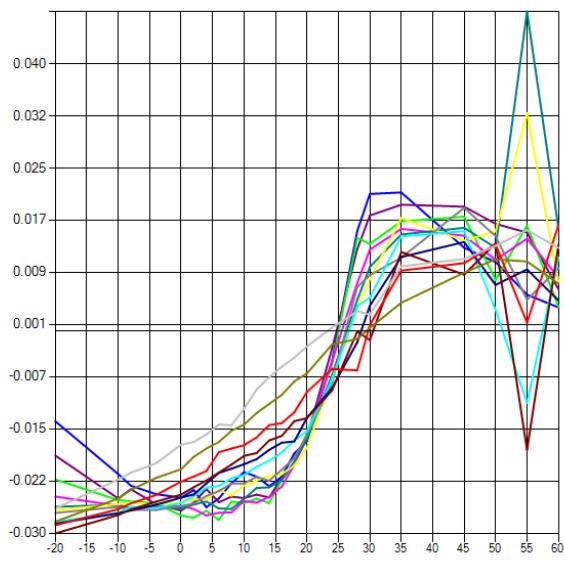
SIDEFORCE DUE TO SPOILERS LEFT

CFYDSPL (alpha,beta,spoiler-left=0)



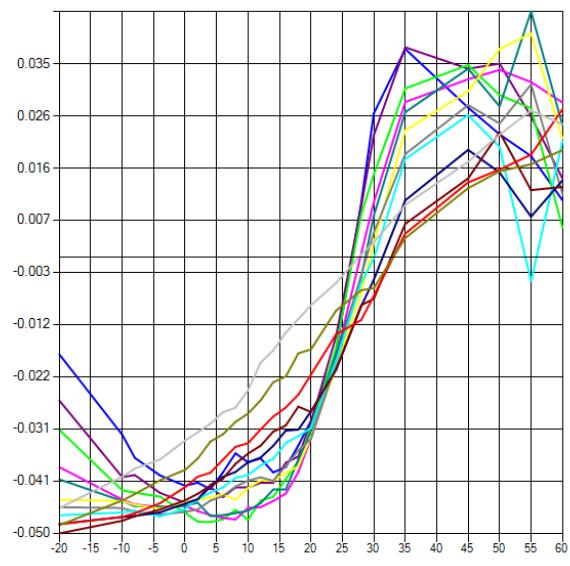
SIDEFORCE DUE TO SPOILERS LEFT

CFYDSPL (alpha,beta,spoiler-left=20)



SIDEFORCE DUE TO SPOILERS LEFT

CFYDSPL (alpha,beta,spoiler-left=50)



Legend for Sideforce due to Spoilers Left:

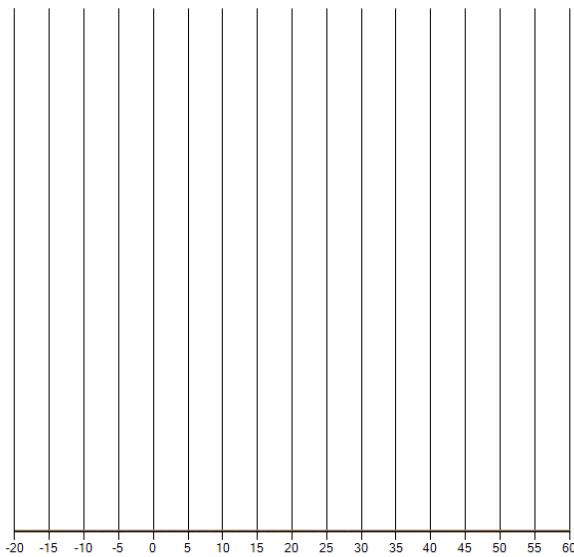
- vsp beta -20
- vsp beta -15
- vsp beta -10
- vsp beta -5
- vsp beta -2
- vsp beta 0
- vsp beta 5
- vsp beta 10
- vsp beta 15
- vsp beta 20
- vsp beta 25
- vsp beta 30
- vsp beta 35
- vsp beta 40
- vsp beta 45
- vsp beta 50
- vsp beta 55
- vsp beta 60

Legend for Sideforce due to Spoilers Left:

- vsp beta -20
- vsp beta -15
- vsp beta -10
- vsp beta -5
- vsp beta -2
- vsp beta 0
- vsp beta 5
- vsp beta 10
- vsp beta 15
- vsp beta 20
- vsp beta 25
- vsp beta 30
- vsp beta 35
- vsp beta 40
- vsp beta 45
- vsp beta 50
- vsp beta 55
- vsp beta 60

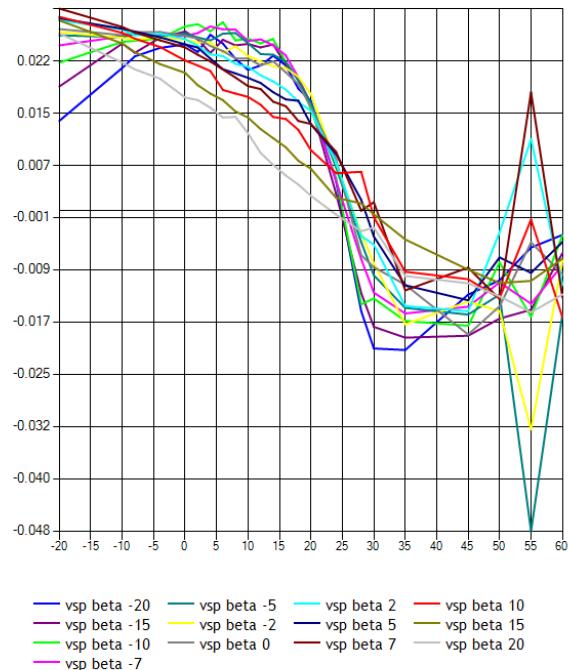
SIDEFORCE DUE TO SPOILERS RIGHT

CFYDSPR (alpha,beta,spoiler-right=0)



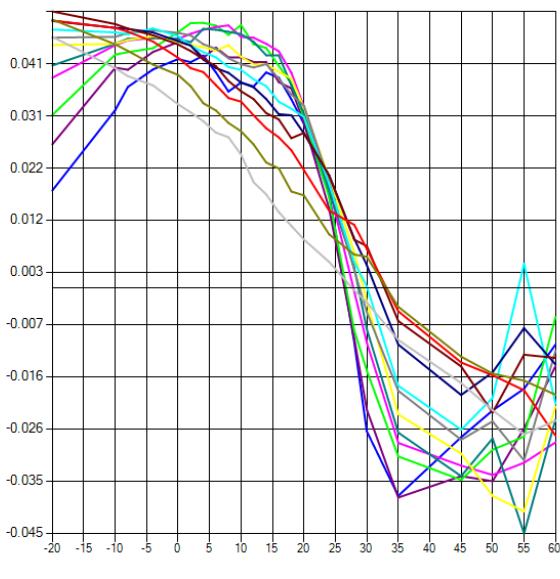
SIDEFORCE DUE TO SPOILERS RIGHT

CFYDSPR (alpha,beta,spoiler-right=20)



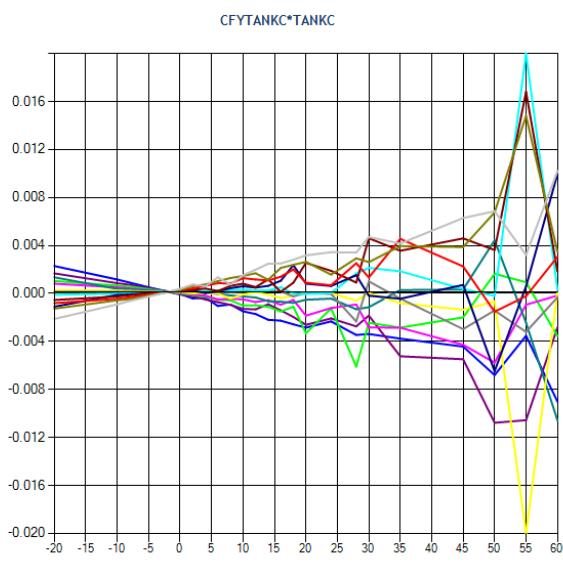
SIDEFORCE DUE TO SPOILERS RIGHT

CFYDSPR (alpha,beta,spoiler-right=50)



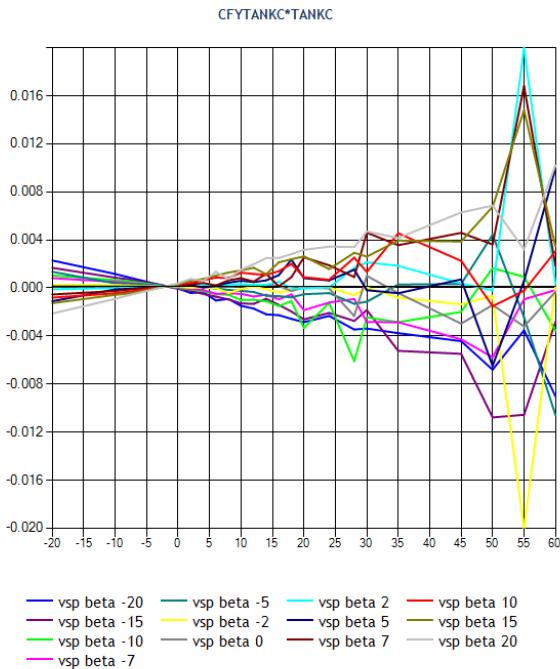
SIDEFORCE INCREMENT DUE TO CENTRE TANK

CFYTANKC (alpha,beta,elevator=-25)



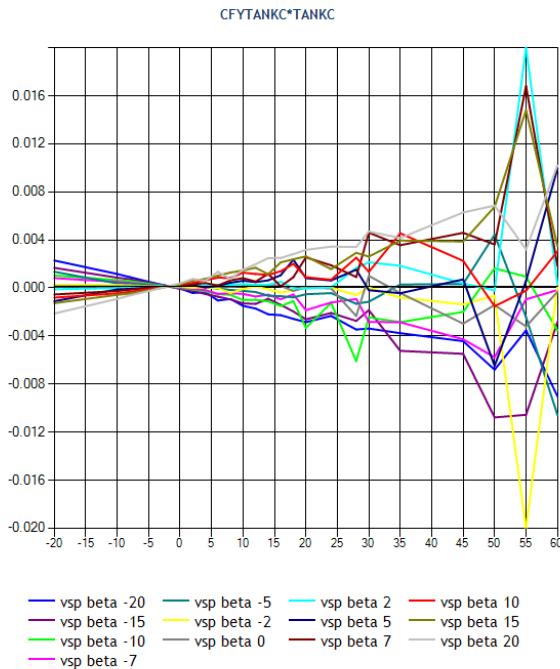
SIDEFORCE INCREMENT DUE TO CENTRE TANK

CFYTANKC (alpha,beta,elevator=-20)



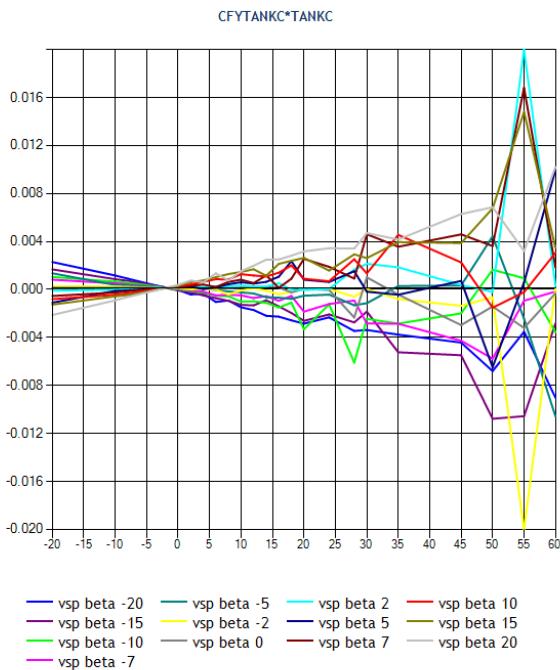
SIDEFORCE INCREMENT DUE TO CENTRE TANK

CFYTANKC (alpha,beta,elevator=-15)



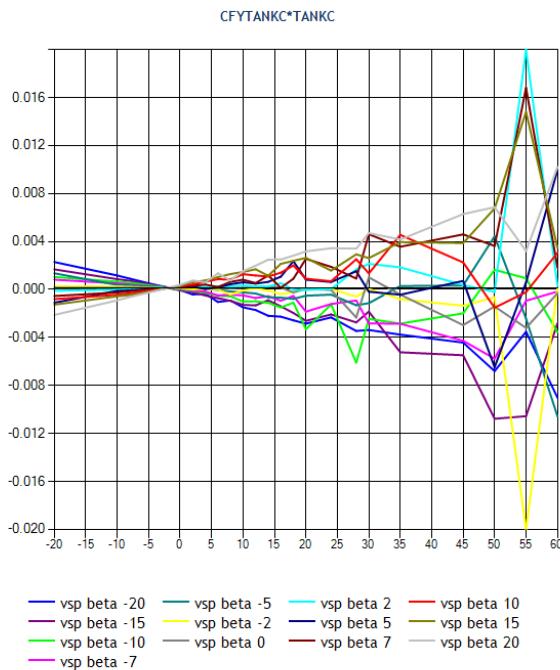
SIDEFORCE INCREMENT DUE TO CENTRE TANK

CFYTANKC (alpha,beta,elevator=-10)



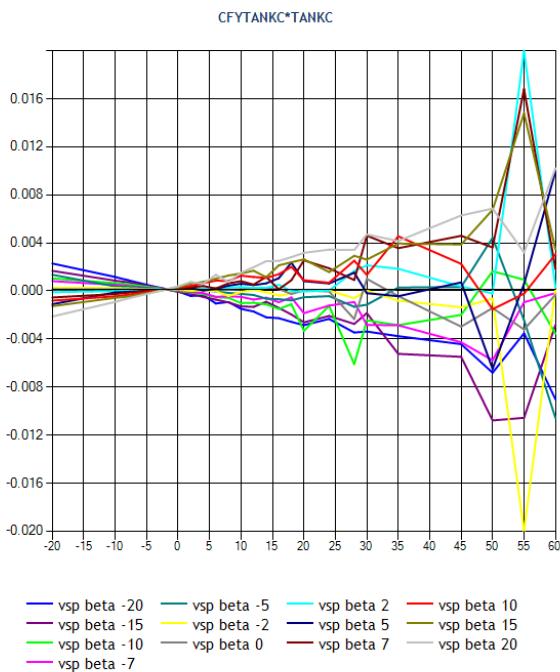
SIDEFORCE INCREMENT DUE TO CENTRE TANK

CFYTANKC (alpha,beta,elevator=-5)



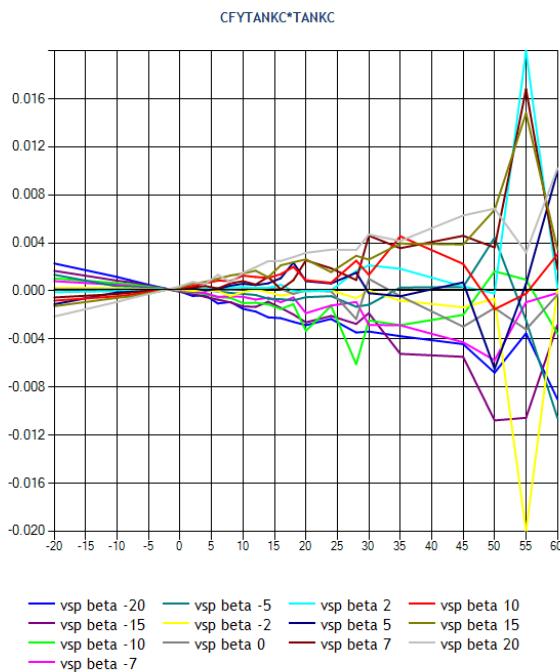
SIDEFORCE INCREMENT DUE TO CENTRE TANK

CFYTANKC (alpha,beta,elevator=0)



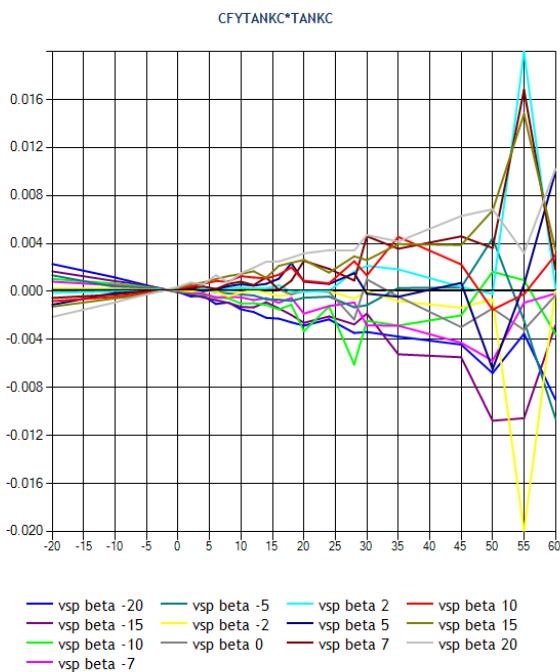
SIDEFORCE INCREMENT DUE TO CENTRE TANK

CFYTANKC (alpha,beta,elevator=5)



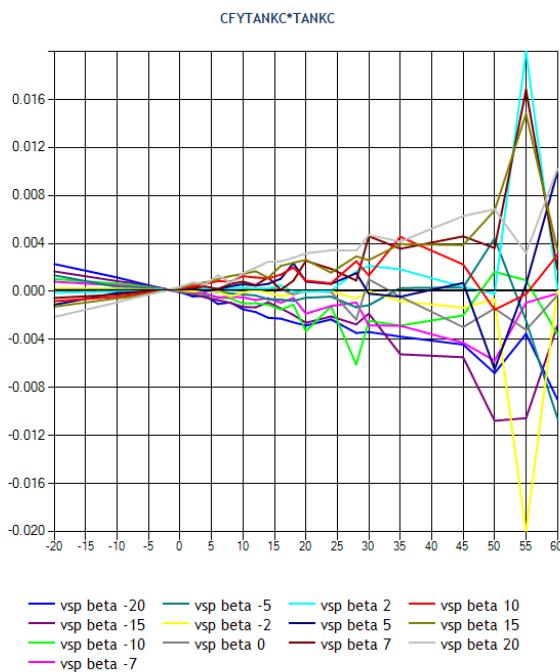
SIDEFORCE INCREMENT DUE TO CENTRE TANK

CFYTANKC (alpha,beta,elevator=10)



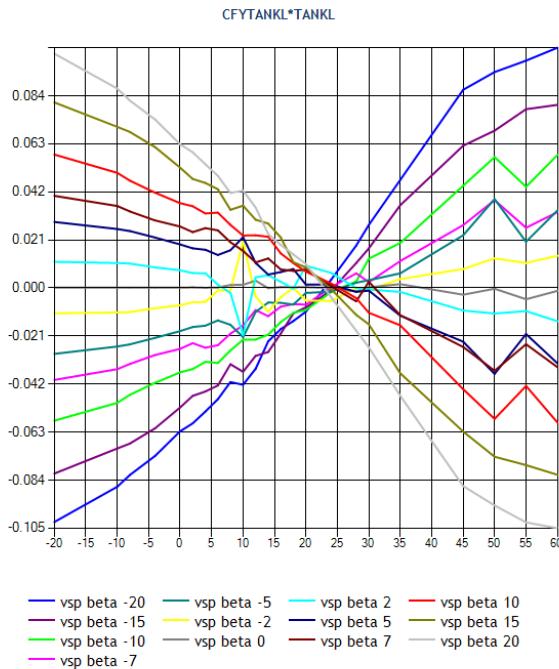
SIDEFORCE INCREMENT DUE TO CENTRE TANK

CFYTANKC (alpha,beta,elevator=15)



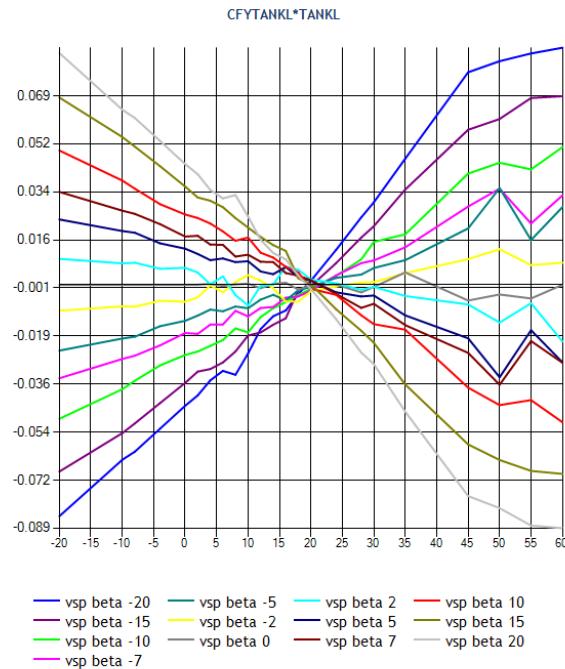
SIDEFORCE INCREMENT DUE TO LEFT WING TANK

CFYTANKL (alpha,beta,elevator=-25)



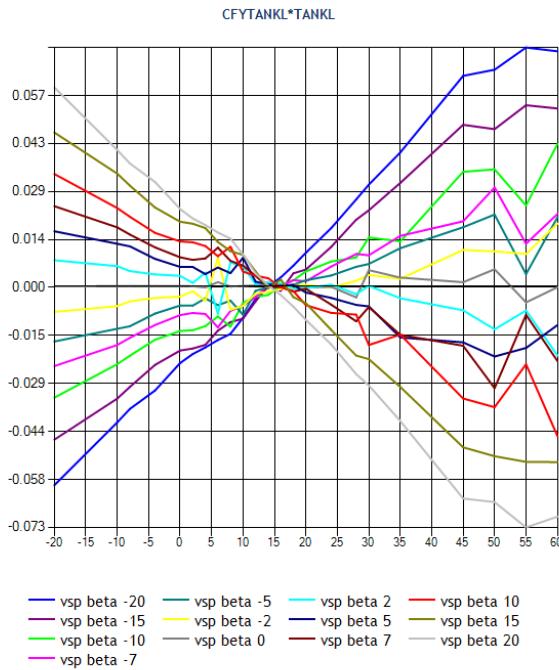
SIDEFORCE INCREMENT DUE TO LEFT WING TANK

CFYTANKL (alpha,beta,elevator=-20)



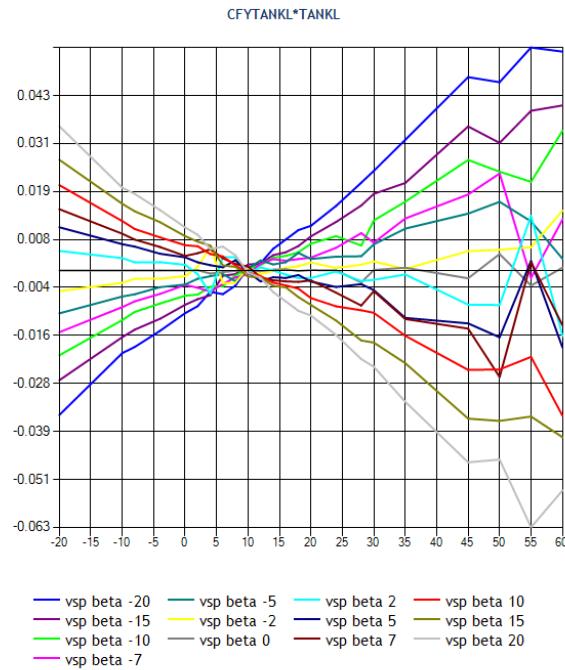
SIDEFORCE INCREMENT DUE TO LEFT WING TANK

CFYTANKL (alpha,beta,elevator=-15)



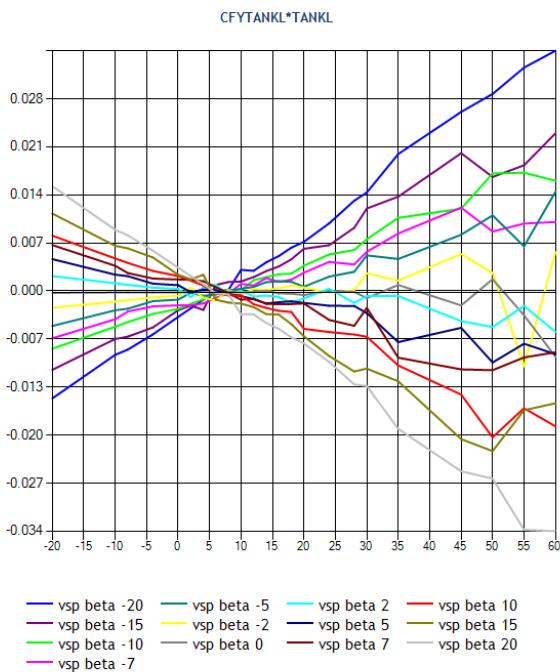
SIDEFORCE INCREMENT DUE TO LEFT WING TANK

CFYTANKL (alpha,beta,elevator=-10)



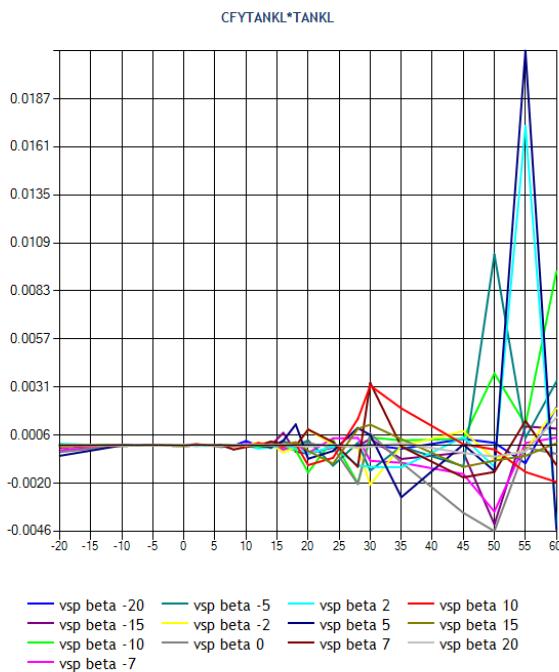
SIDEFORCE INCREMENT DUE TO LEFT WING TANK

CFYTANKL (alpha,beta,elevator=-5)



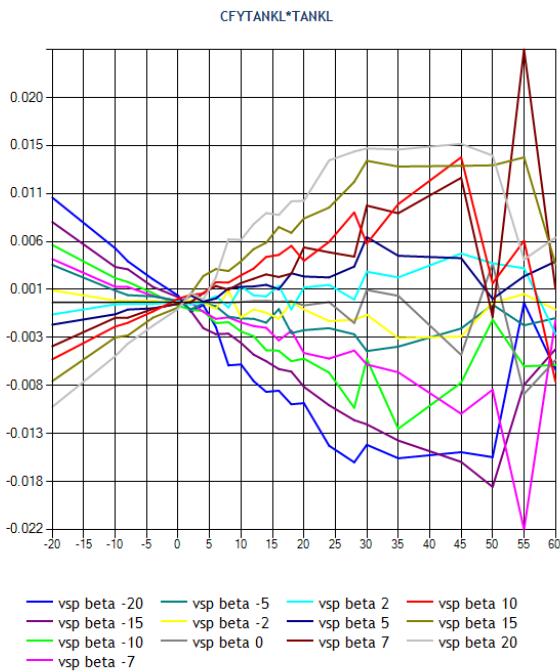
SIDEFORCE INCREMENT DUE TO LEFT WING TANK

CFYTANKL (alpha,beta,elevator=0)



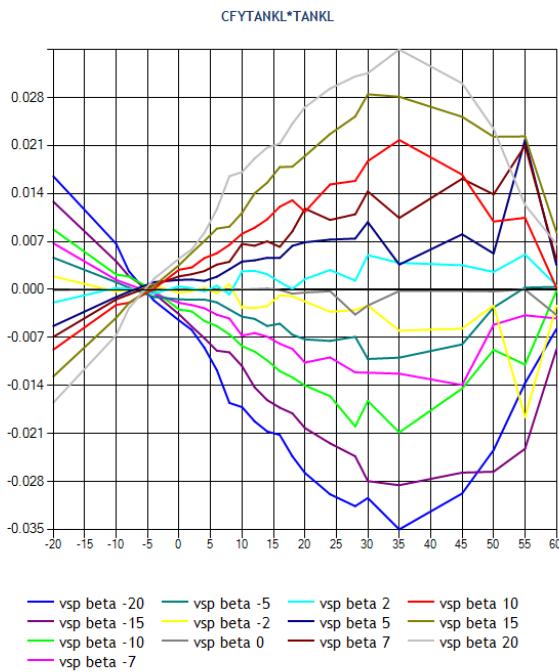
SIDEFORCE INCREMENT DUE TO LEFT WING TANK

CFYTANKL (alpha,beta,elevator=5)



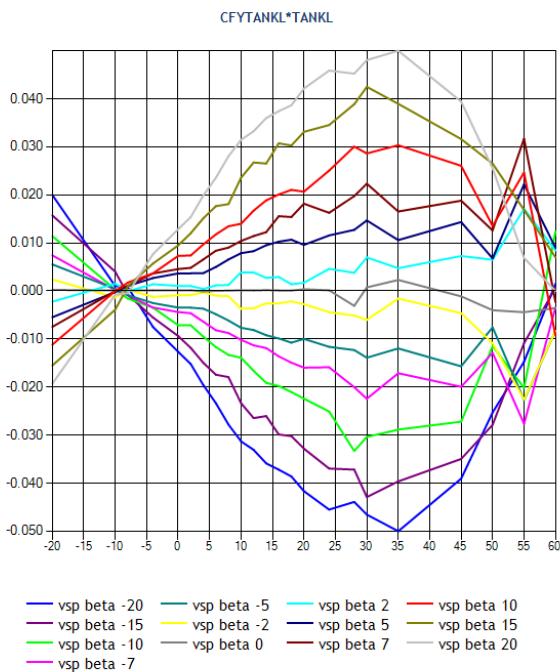
SIDEFORCE INCREMENT DUE TO LEFT WING TANK

CFYTANKL (alpha,beta,elevator=10)



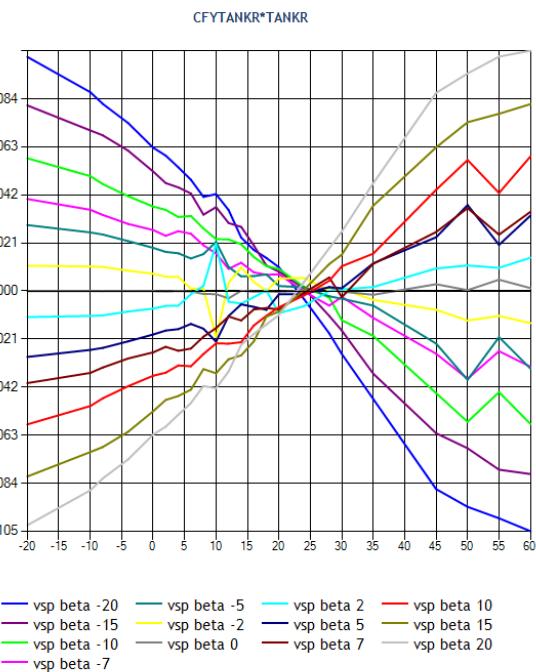
SIDEFORCE INCREMENT DUE TO LEFT WING TANK

CFYTANKL (alpha,beta,elevator=15)



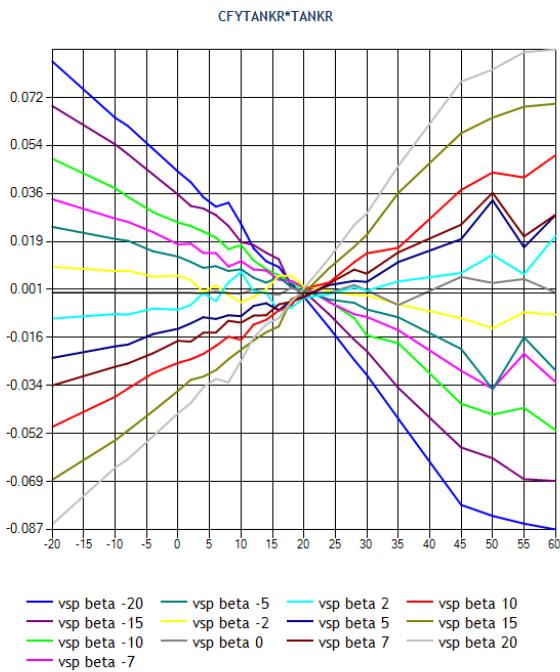
SIDEFORCE INCREMENT DUE TO RIGHT WING TANK

CFYTANKR (alpha,beta,elevator=-25)



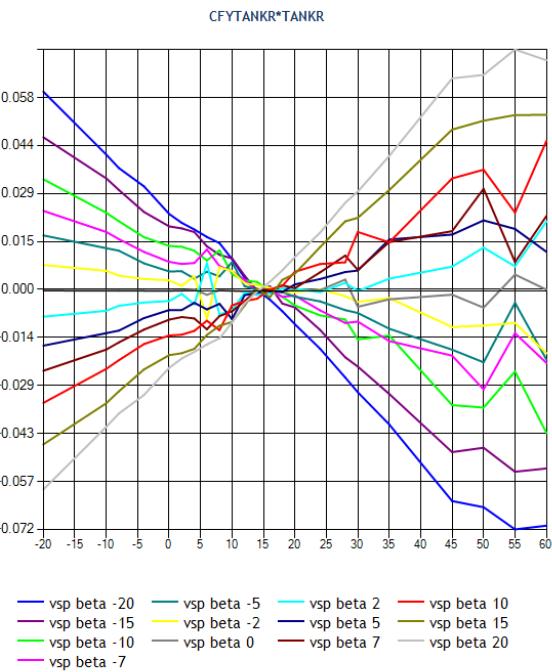
SIDEFORCE INCREMENT DUE TO RIGHT WING TANK

CFYTANKR (alpha,beta,elevator=-20)



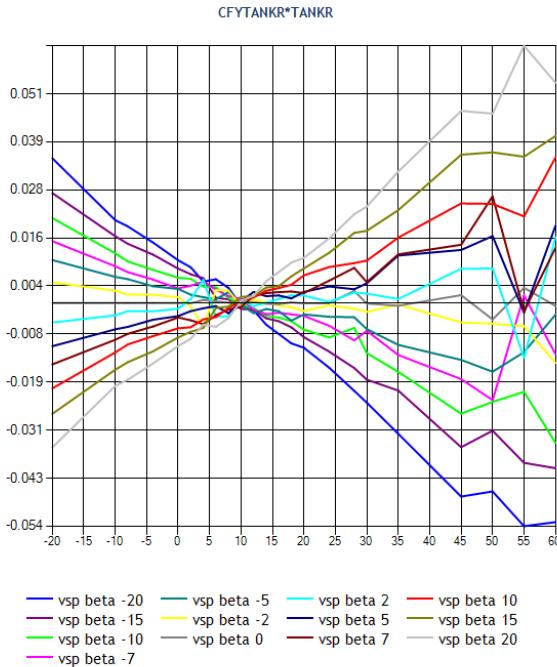
SIDEFORCE INCREMENT DUE TO RIGHT WING TANK

CFYTANKR (alpha,beta,elevator=-15)



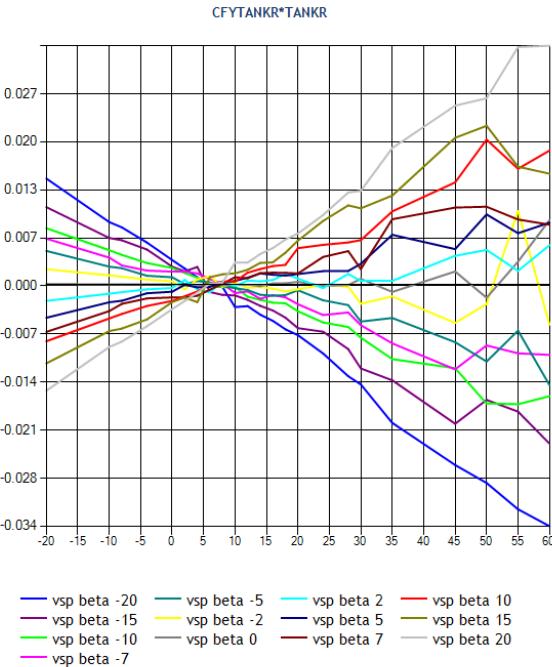
SIDEFORCE INCREMENT DUE TO RIGHT WING TANK

CFYTANKR (alpha,beta,elevator=-10)



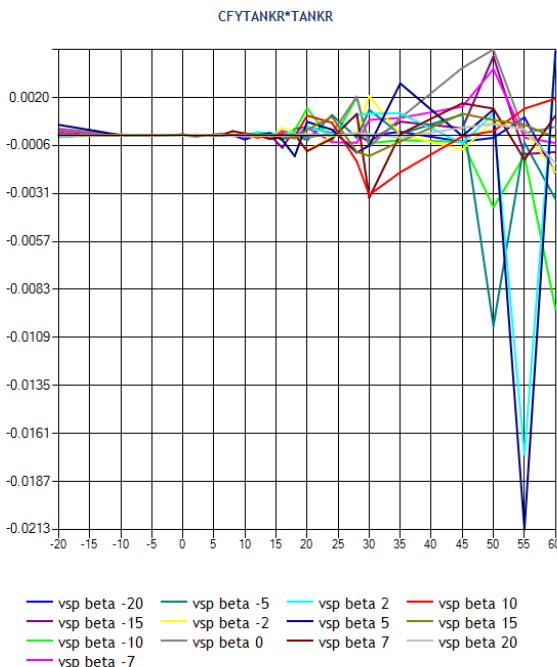
SIDEFORCE INCREMENT DUE TO RIGHT WING TANK

CFYTANKR (alpha,beta,elevator=-5)



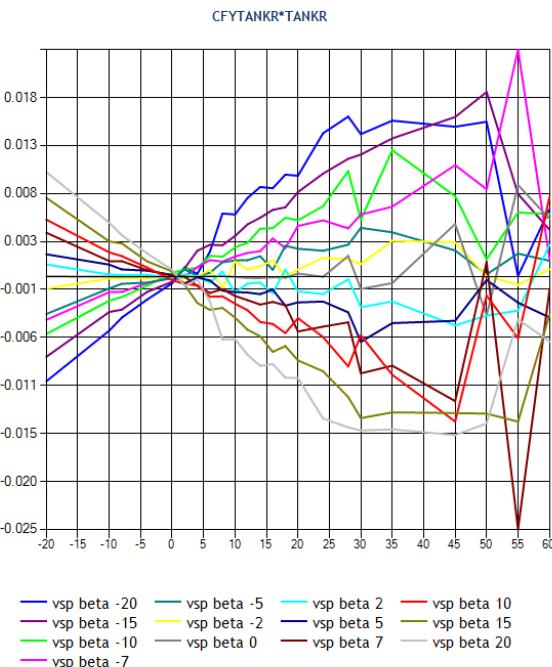
SIDEFORCE INCREMENT DUE TO RIGHT WING TANK

CFYTANKR (alpha,beta,elevator=0)



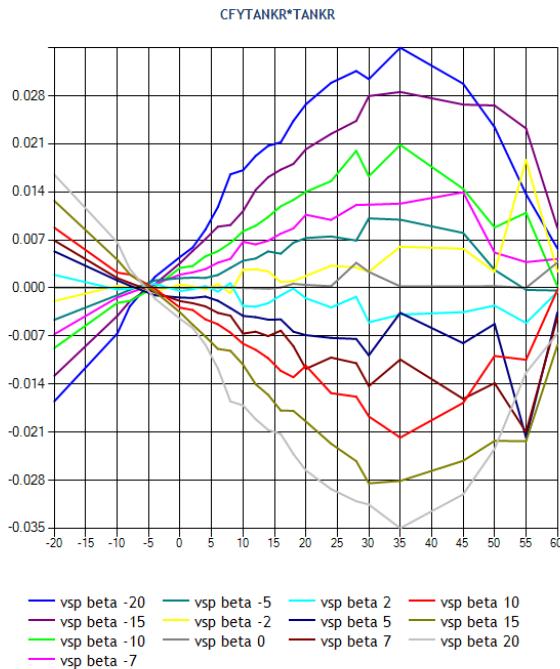
SIDEFORCE INCREMENT DUE TO RIGHT WING TANK

CFYTANKR (alpha,beta,elevator=5)



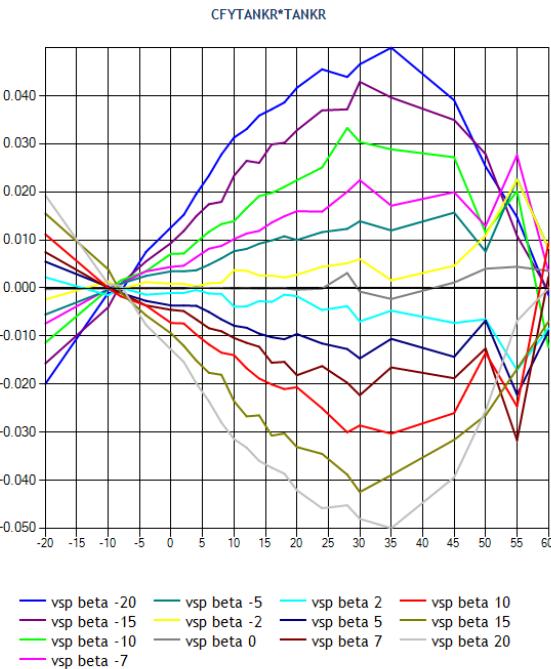
SIDEFORCE INCREMENT DUE TO RIGHT WING TANK

CFYTANKR (alpha,beta,elevator=10)



SIDEFORCE INCREMENT DUE TO RIGHT WING TANK

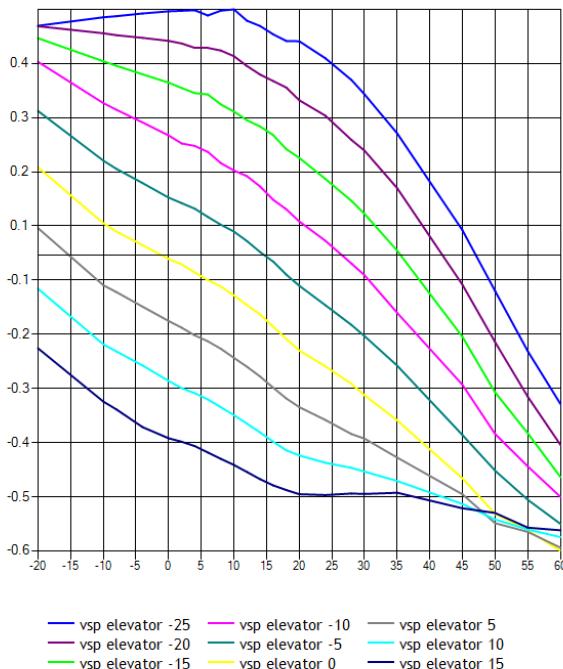
CFYTANKR (alpha,beta,elevator=15)



PITCH

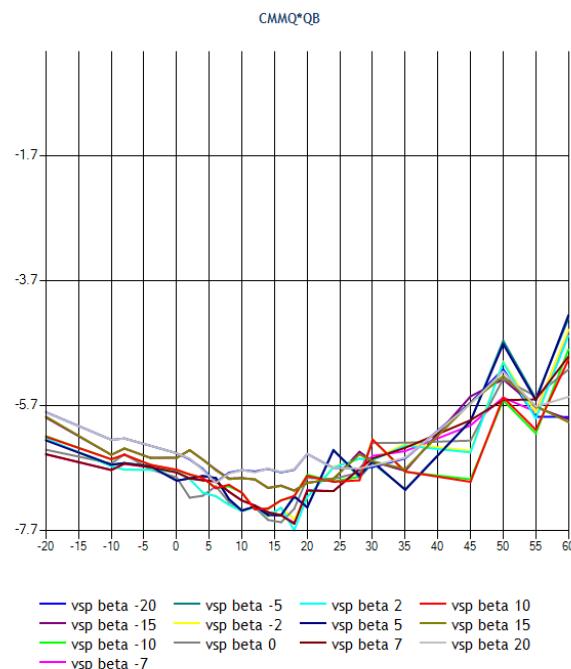
BASE PITCHING MOMENT

CMM1(alpha,elevator)

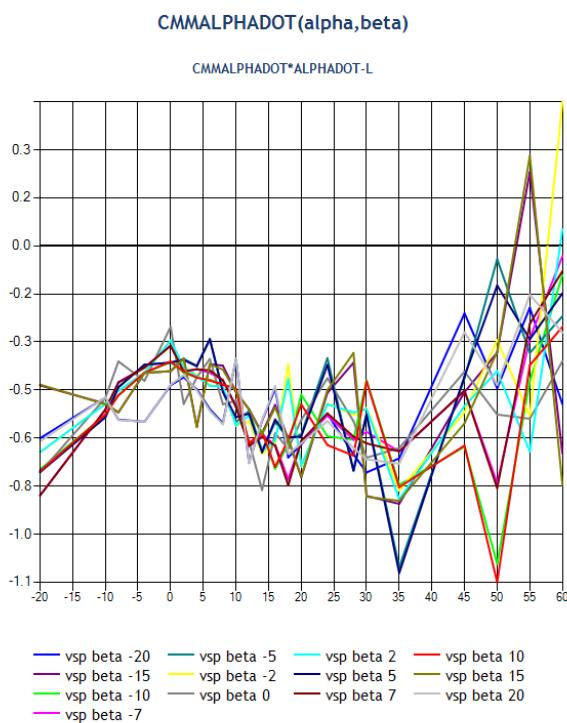


PITCH DAMPING DERIVATIVE

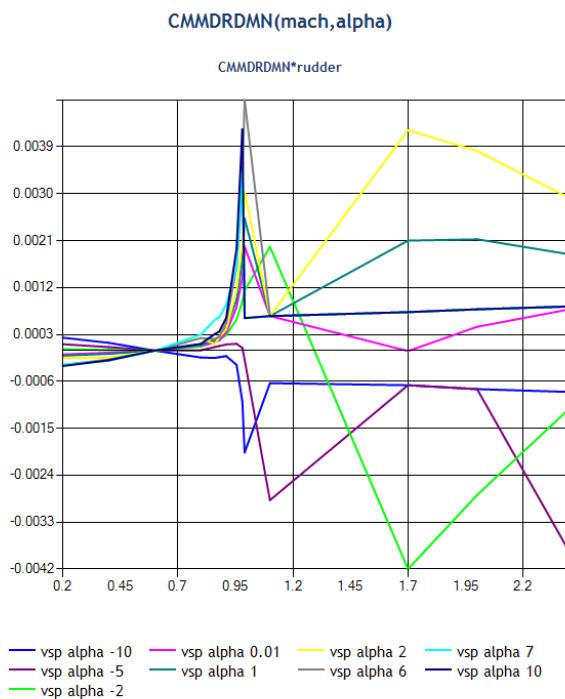
CMMQ(alpha,beta)



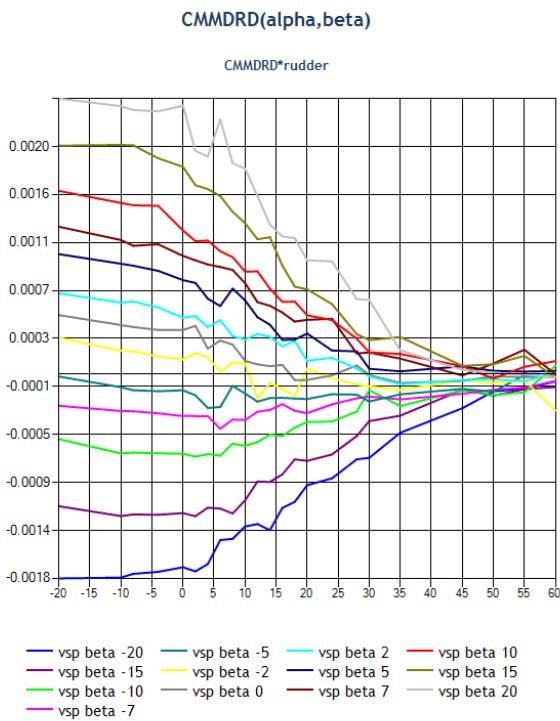
PITCH DERIVATIVE MOMENT DUE TO ALPHA DOT



PITCH MOMENT CHANGE DUE TO MACH DUE TO RUDDER DEFLECTION



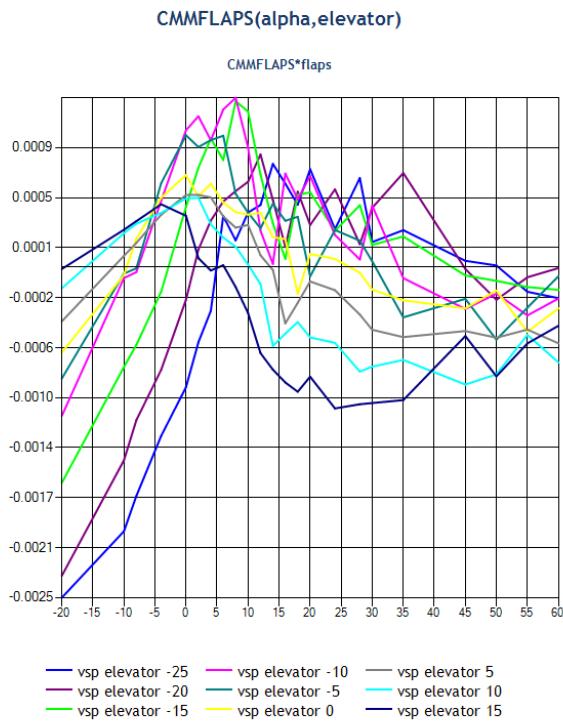
PITCH MOMENT DUE TO RUDDER DEFLECTION



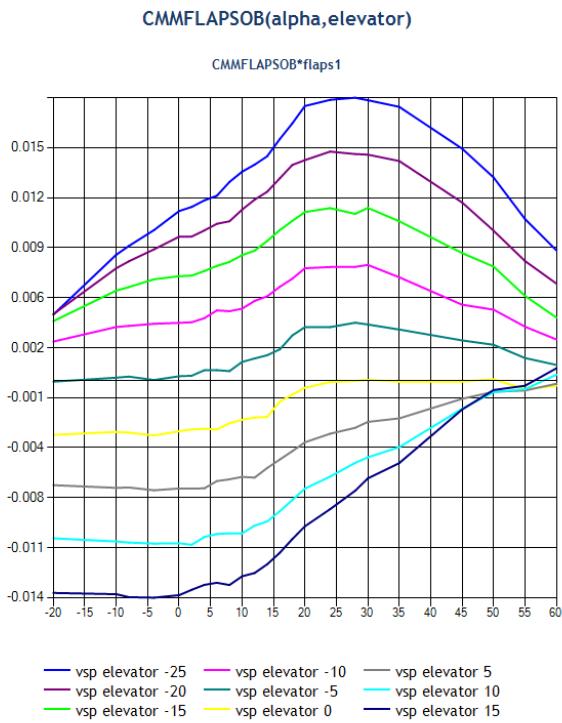
PITCH MOMENT DUE TO SLATS



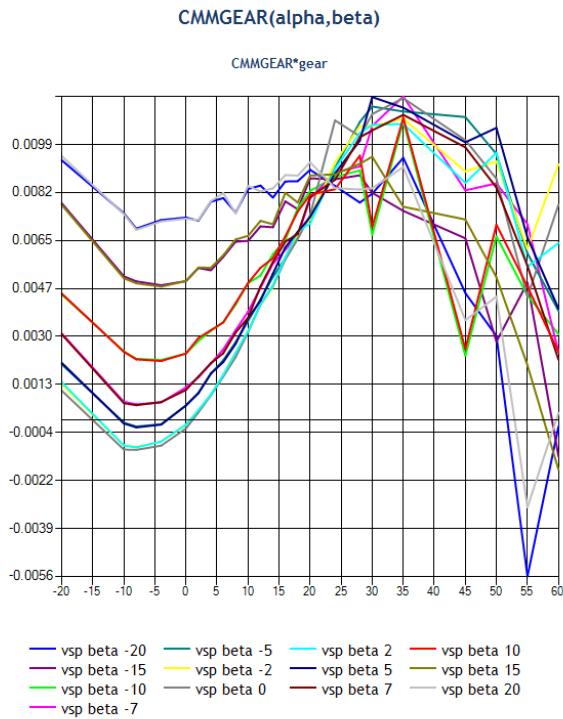
PITCHING MOMENT DUE TO FLAPS INBOARD



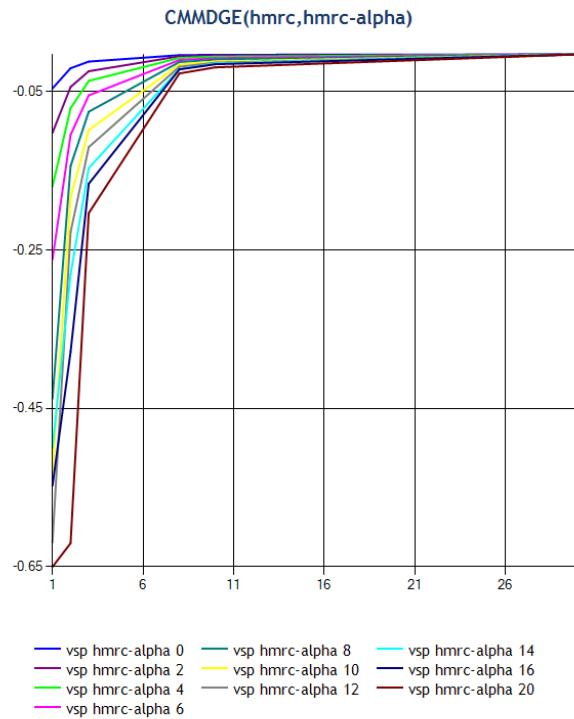
PITCHING MOMENT DUE TO FLAPS OUTBOARD



PITCHING MOMENT DUE TO GEAR

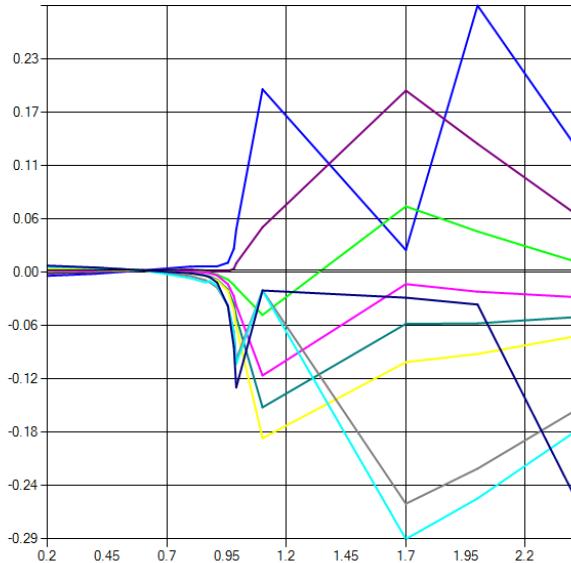


PITCHING MOMENT DUE TO GROUND EFFECT



PITCHING MOMENT DUE TO MACH

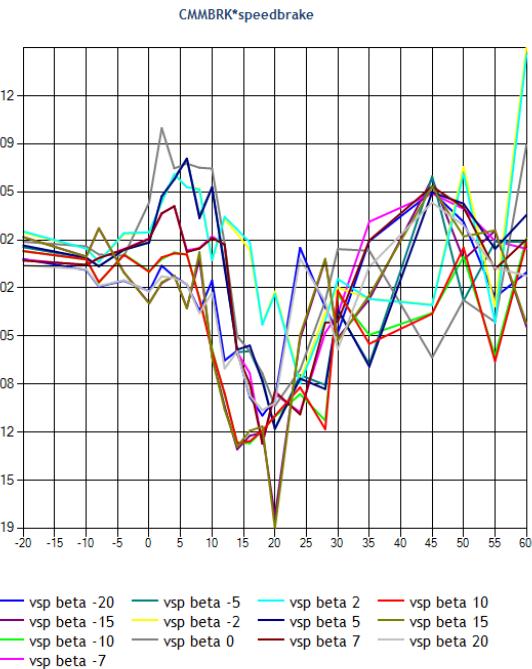
CMMMN(mach,alpha)



Legend for CMMMN(mach, alpha):
 — vsp alpha -10 — vsp alpha 0.01 — vsp alpha 2 — vsp alpha 7
 — vsp alpha -5 — vsp alpha 1 — vsp alpha 6 — vsp alpha 10
 — vsp alpha -2 — vsp alpha 0 — vsp alpha 5 — vsp alpha 15
 — vsp alpha -10 — vsp alpha 0 — vsp alpha 7 — vsp alpha 20
 — vsp alpha -2 — vsp alpha 0 — vsp alpha 5 — vsp alpha 10

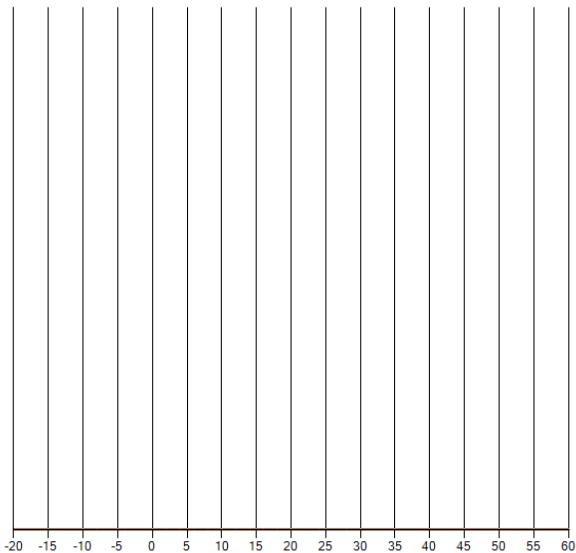
PITCHING MOMENT DUE TO SPEEDBRAKE

CMMBRK(alpha,beta)



PITCHING MOMENT DUE TO SPOILERS LEFT

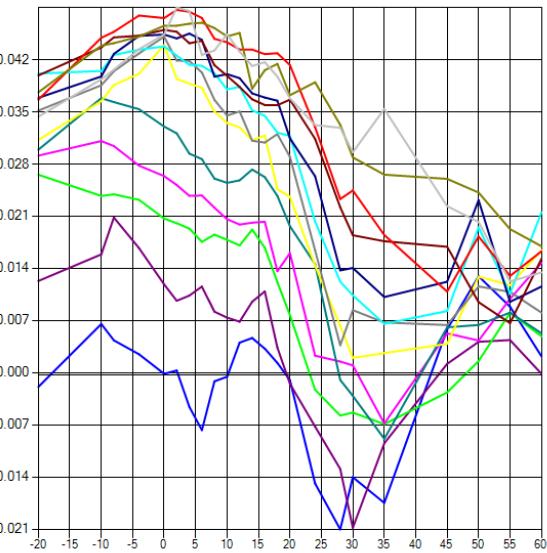
CMMDSPL (alpha,beta,spoiler-left=0)



Legend for CMMDSPL (alpha, beta, spoiler-left=0):
 — vsp beta -20 — vsp beta -5 — vsp beta 2 — vsp beta 10
 — vsp beta -15 — vsp beta -2 — vsp beta 5 — vsp beta 15
 — vsp beta -10 — vsp beta 0 — vsp beta 7 — vsp beta 20
 — vsp beta -7 — vsp beta 0 — vsp beta 5 — vsp beta 10

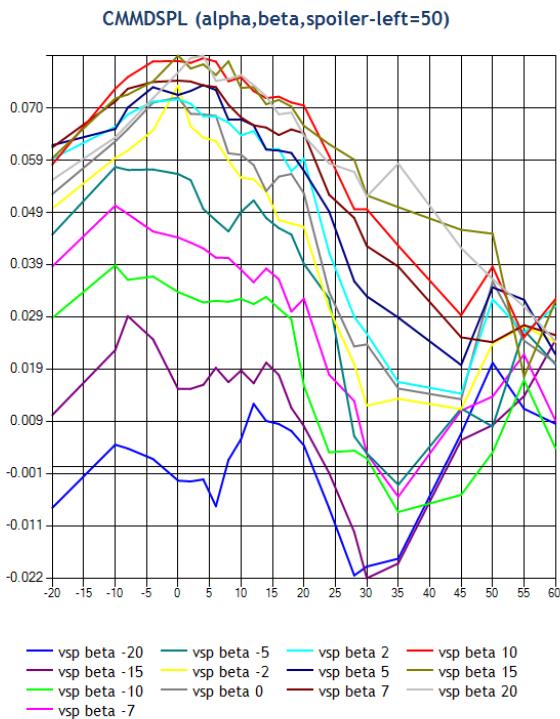
PITCHING MOMENT DUE TO SPOILERS LEFT

CMMDSPL (alpha,beta,spoiler-left=20)

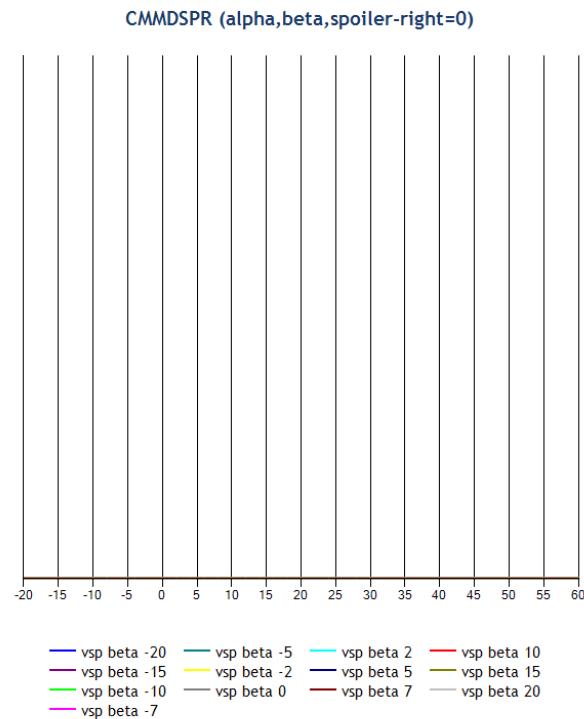


Legend for CMMDSPL (alpha, beta, spoiler-left=20):
 — vsp beta -20 — vsp beta -5 — vsp beta 2 — vsp beta 10
 — vsp beta -15 — vsp beta -2 — vsp beta 5 — vsp beta 15
 — vsp beta -10 — vsp beta 0 — vsp beta 7 — vsp beta 20
 — vsp beta -7 — vsp beta 0 — vsp beta 5 — vsp beta 10

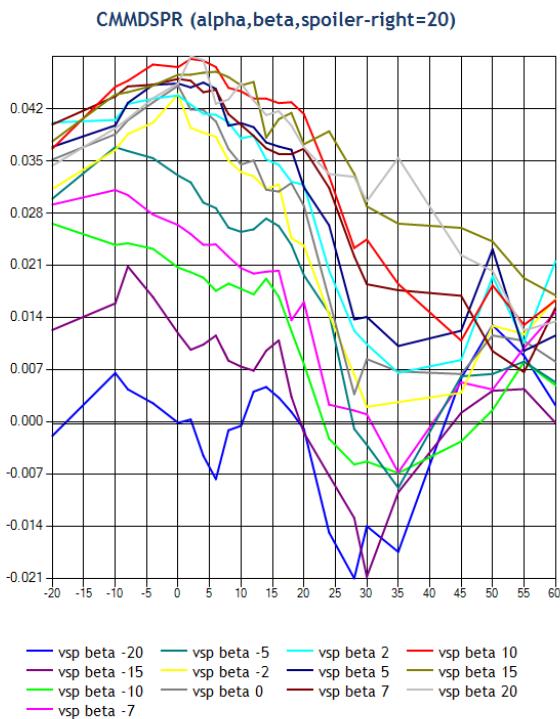
PITCHING MOMENT DUE TO SPOILERS LEFT



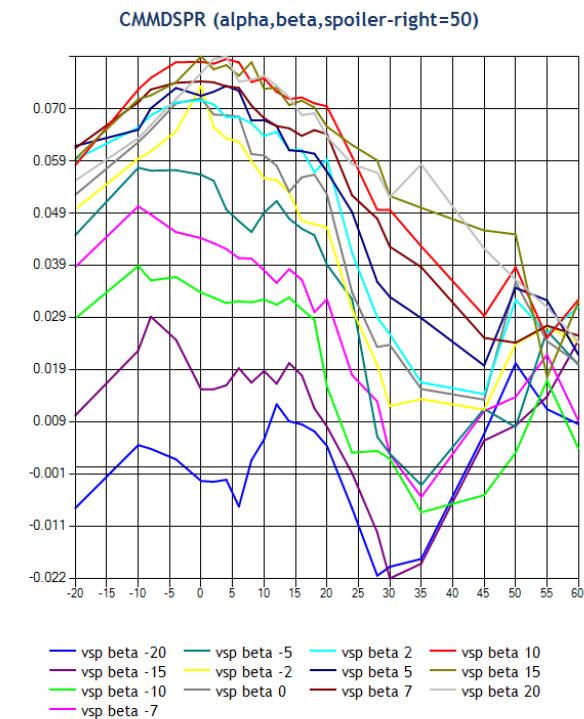
PITCHING MOMENT DUE TO SPOILERS RIGHT



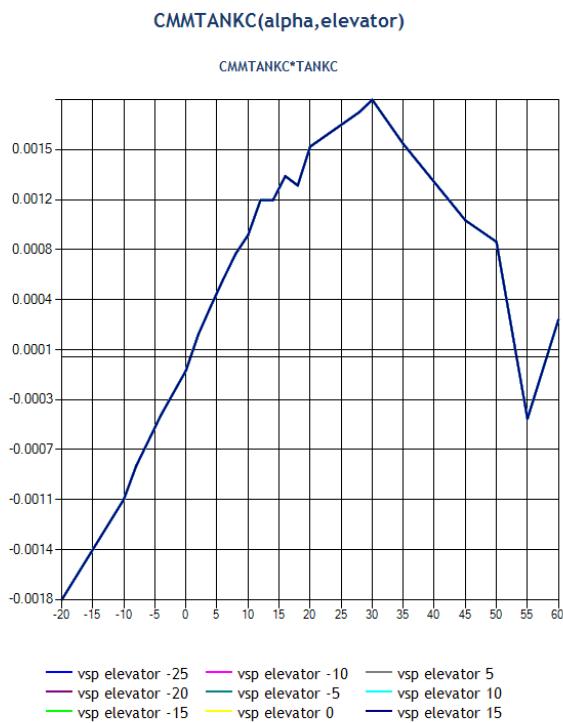
PITCHING MOMENT DUE TO SPOILERS RIGHT



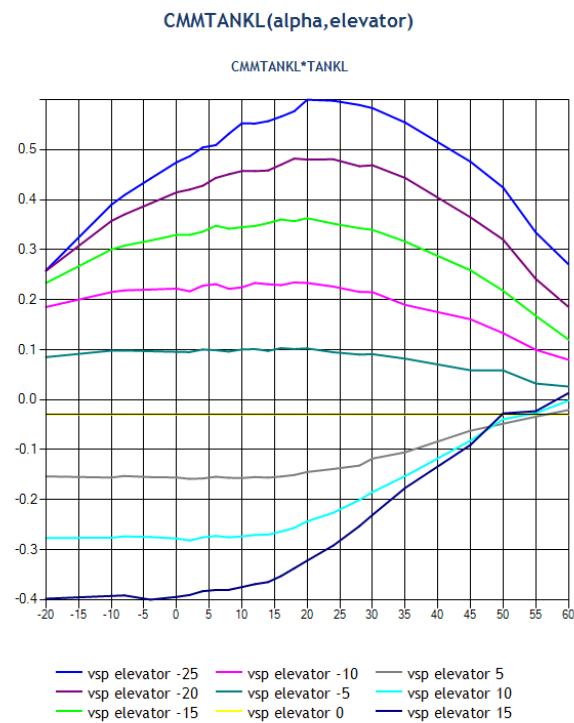
PITCHING MOMENT DUE TO SPOILERS RIGHT



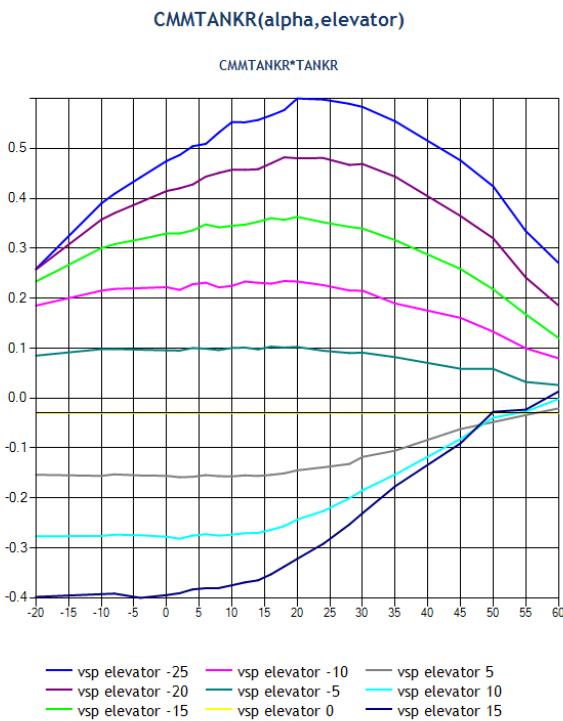
PITCHING MOMENT INCREMENT DUE TO CENTRE TANK



PITCHING MOMENT INCREMENT DUE TO LEFT WING TANK

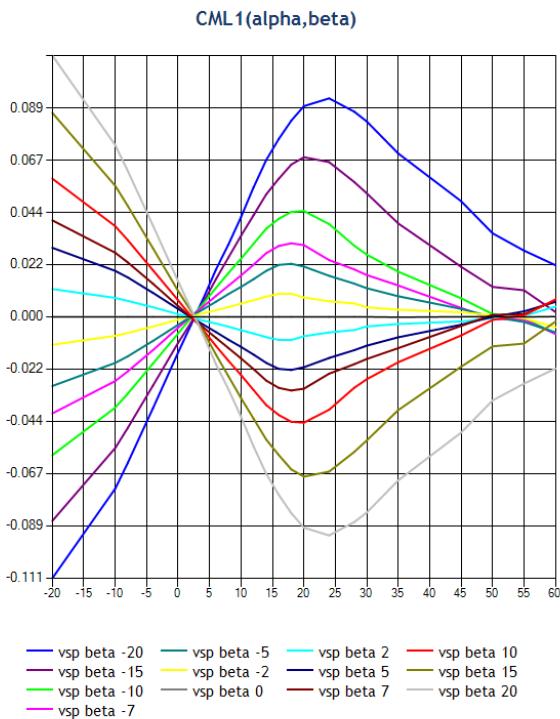


PITCHING MOMENT INCREMENT DUE TO RIGHT WING TANK

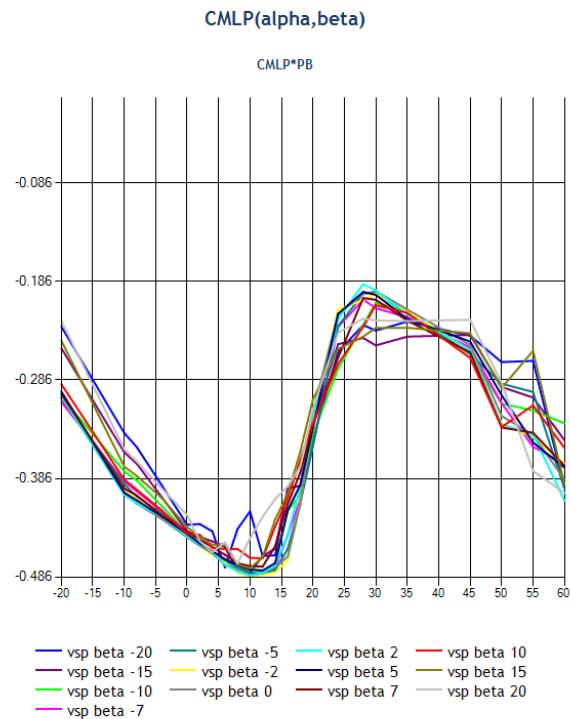


ROLL

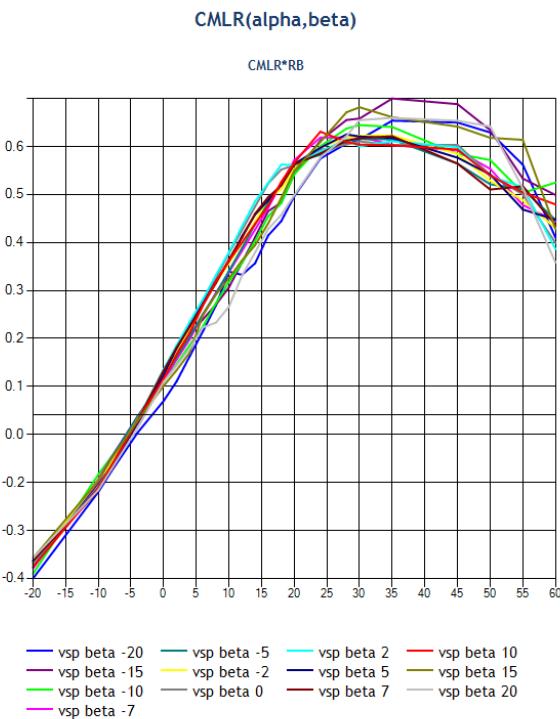
BASE ROLLING MOMENT



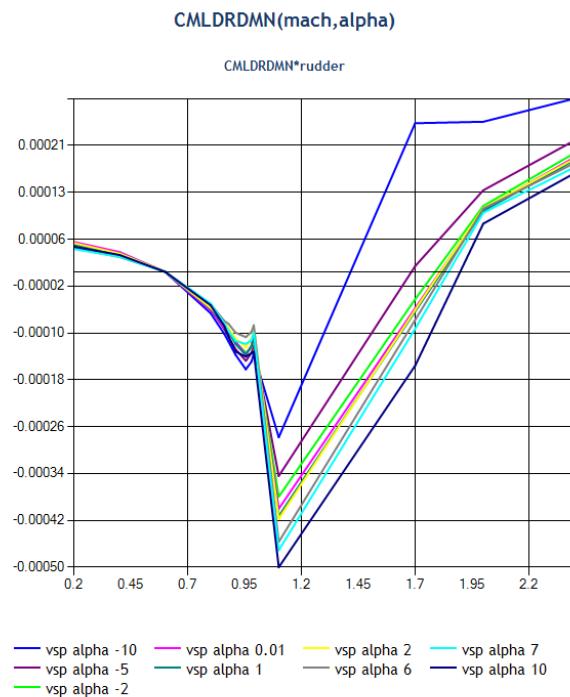
ROLL DAMPING DERIVATIVE



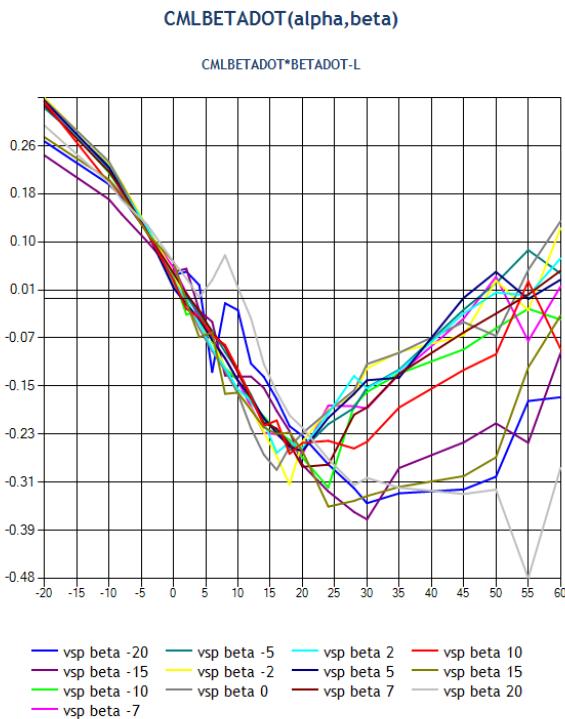
ROLL DERIVATIVE MOMENT DUE TO YAW RATE



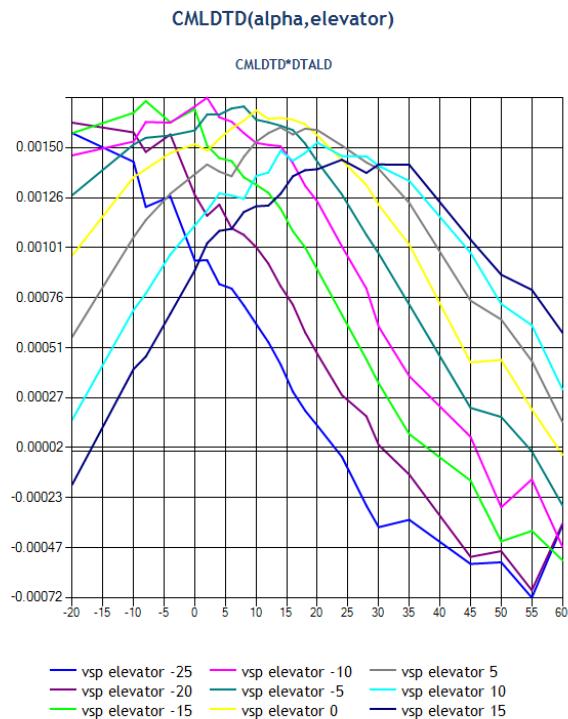
ROLL MOMENT CHANGE DUE TO MACH DUE TO RUDDER DEFLECTION



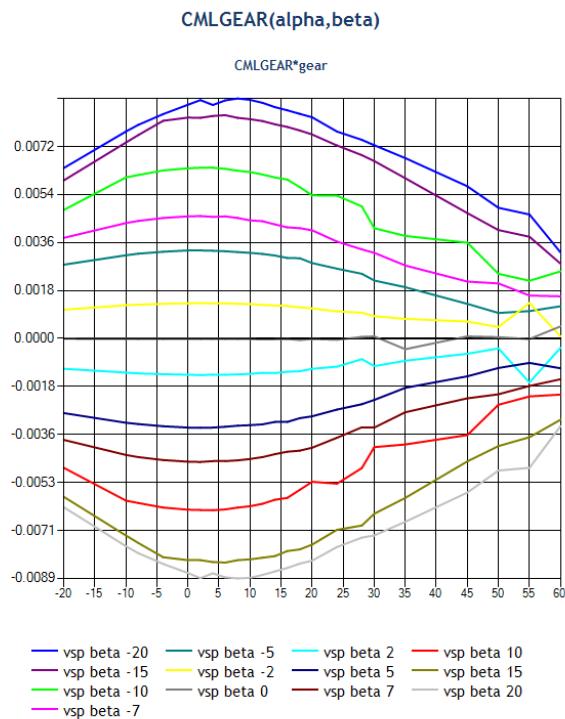
ROLL MOMENT DERIVATIVE FOR BETA DOT



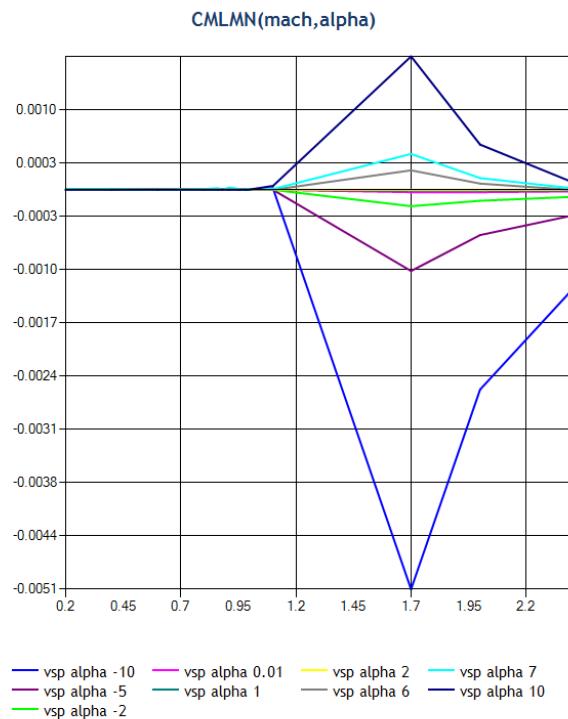
ROLL MOMENT DUE TO DIFFERENTIAL TAIL DEFLECTION



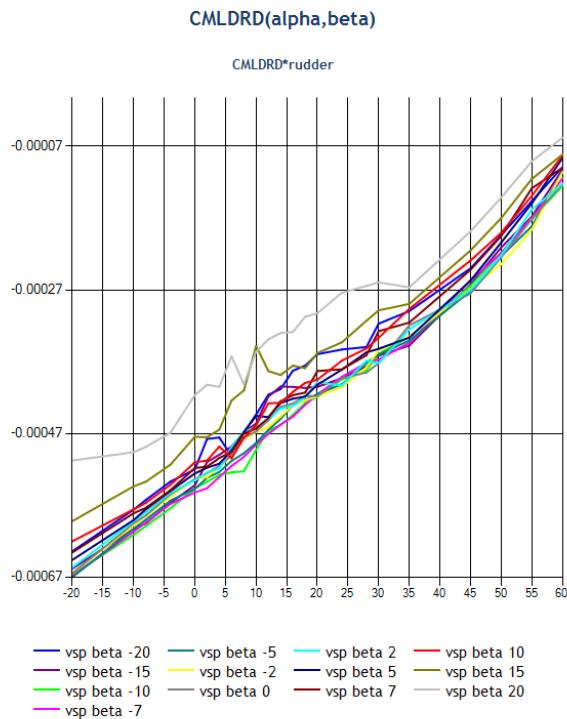
ROLL MOMENT DUE TO GEAR



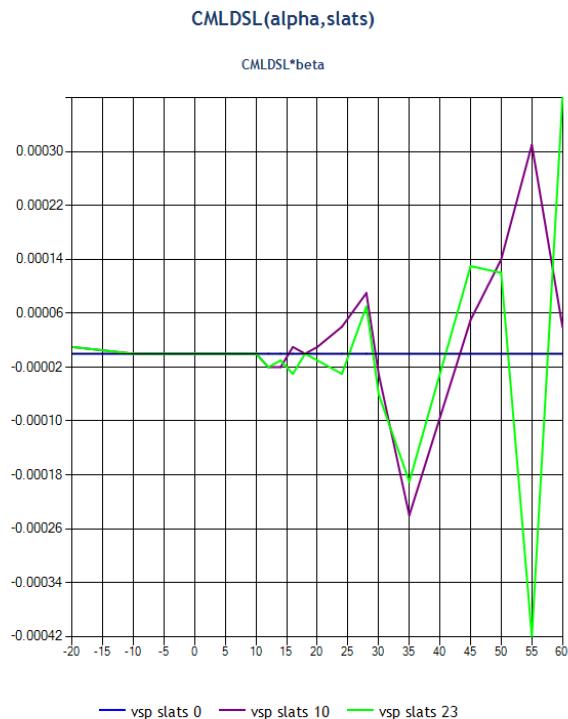
ROLL MOMENT DUE TO MACH



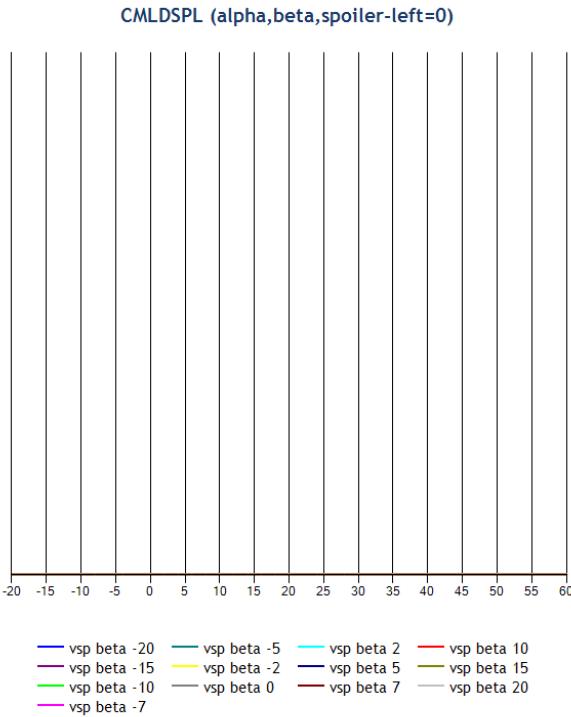
ROLL MOMENT DUE TO RUDDER DEFLECTION



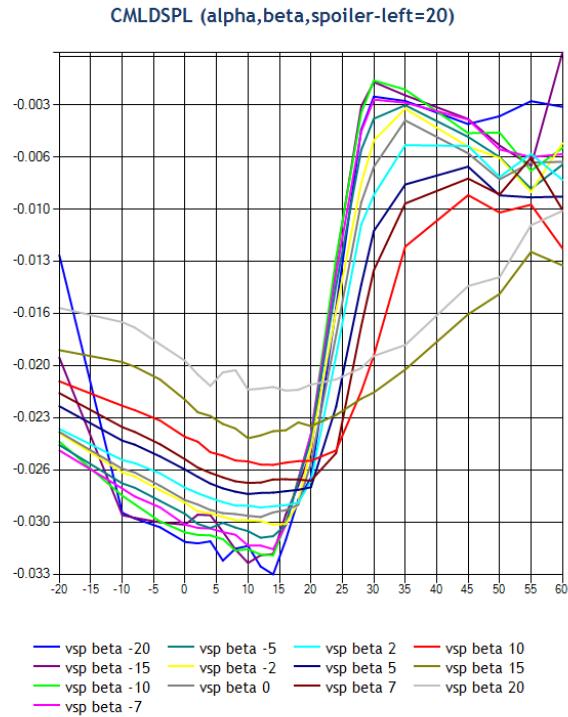
ROLL MOMENT DUE TO SLATS



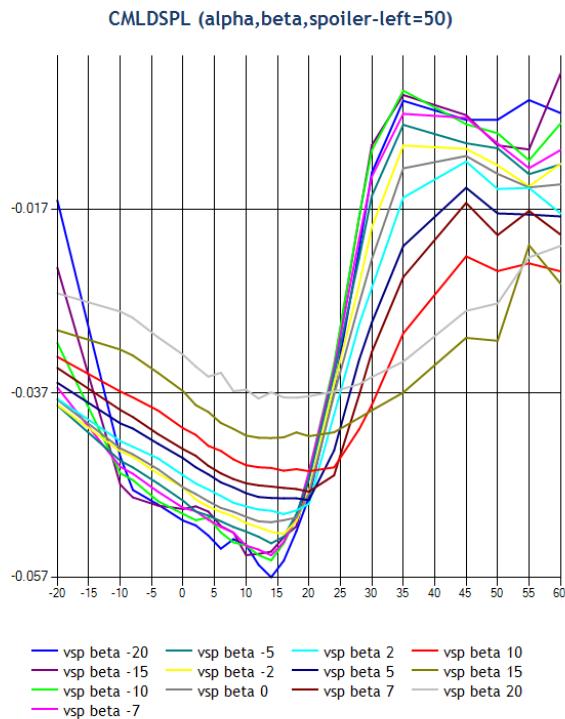
ROLL MOMENT DUE TO SPOILERS LEFT



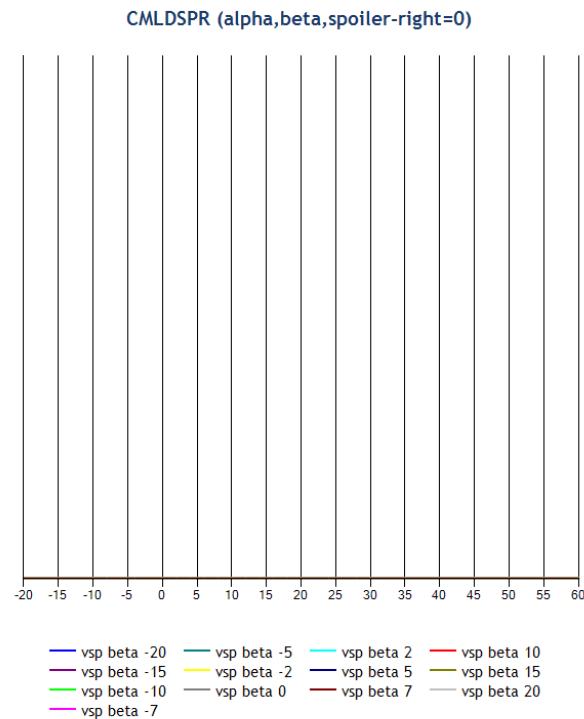
ROLL MOMENT DUE TO SPOILERS LEFT



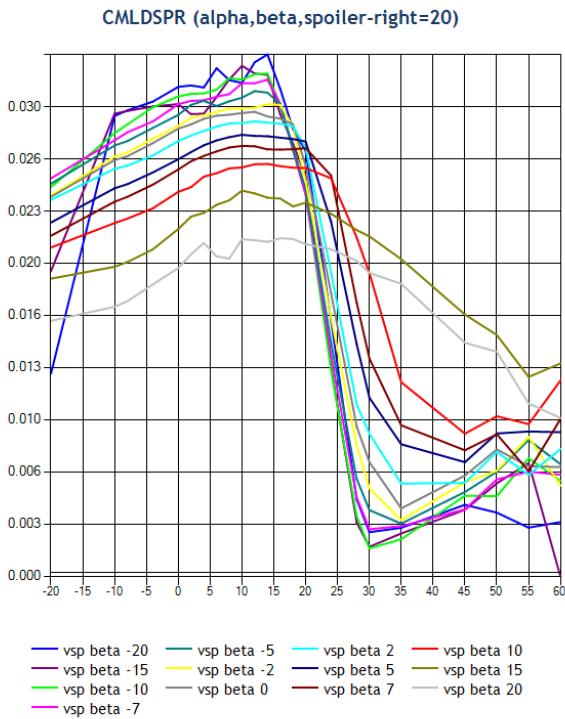
ROLL MOMENT DUE TO SPOILERS LEFT



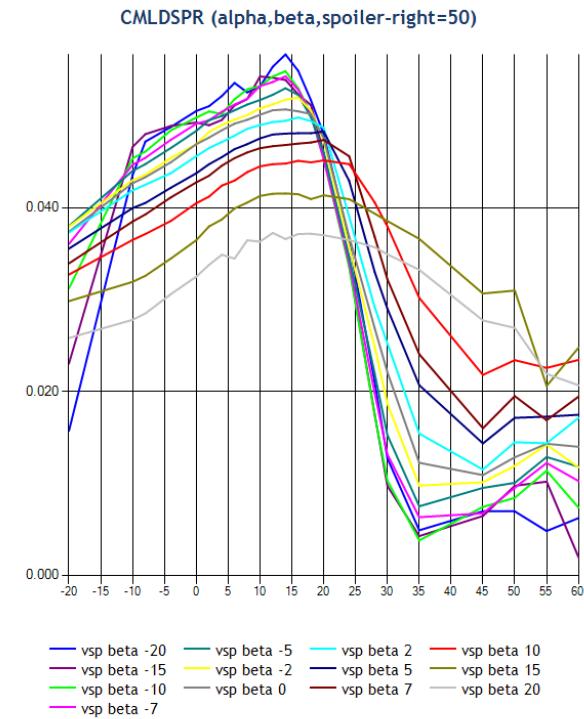
ROLL MOMENT DUE TO SPOILERS RIGHT



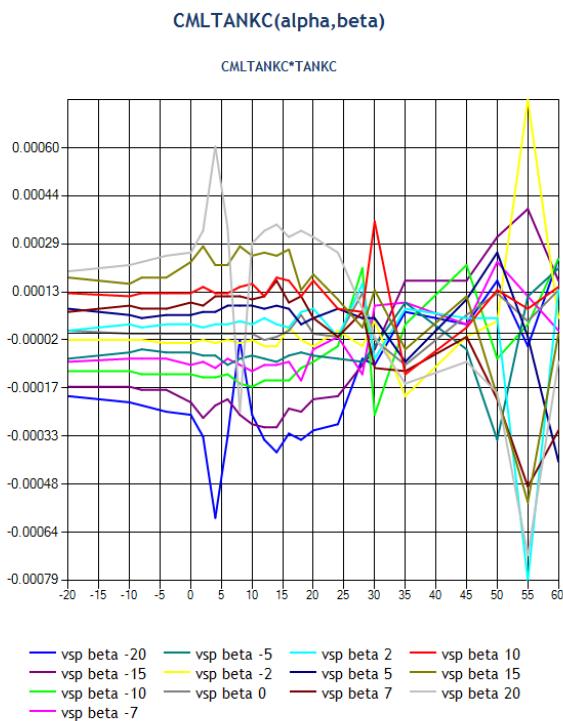
ROLL MOMENT DUE TO SPOILERS RIGHT



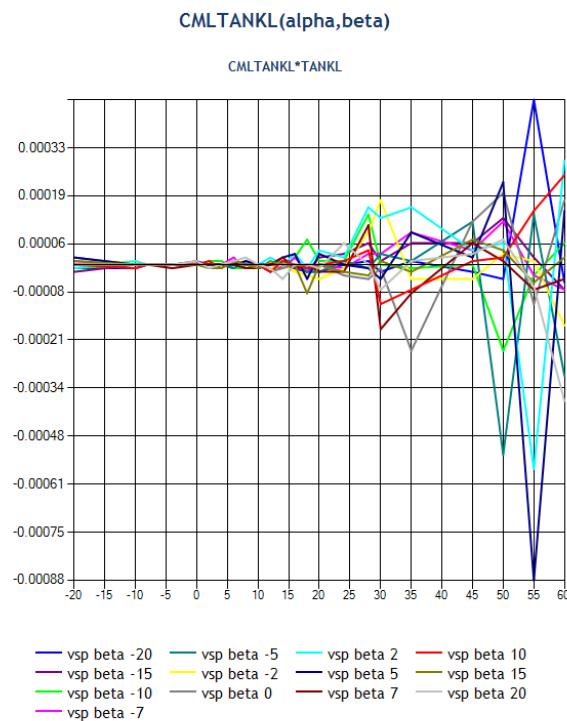
ROLL MOMENT DUE TO SPOILERS RIGHT



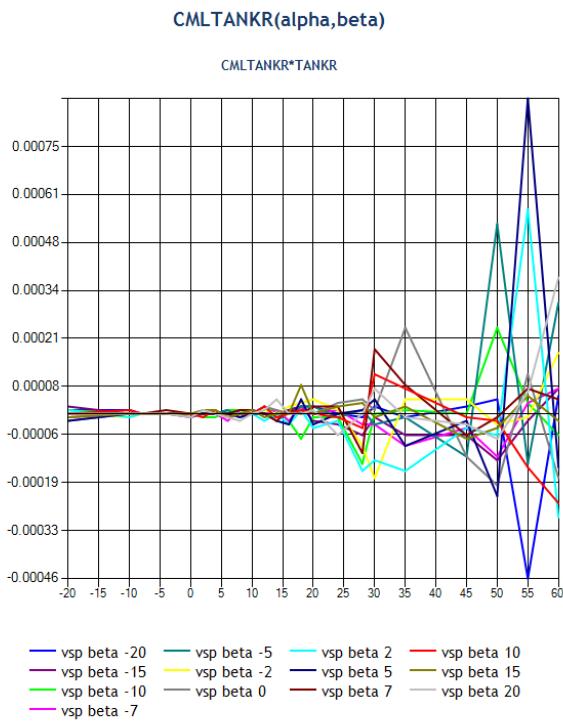
ROLLING MOMENT INCREMENT DUE TO CENTRE TANK



ROLLING MOMENT INCREMENT DUE TO LEFT WING TANK



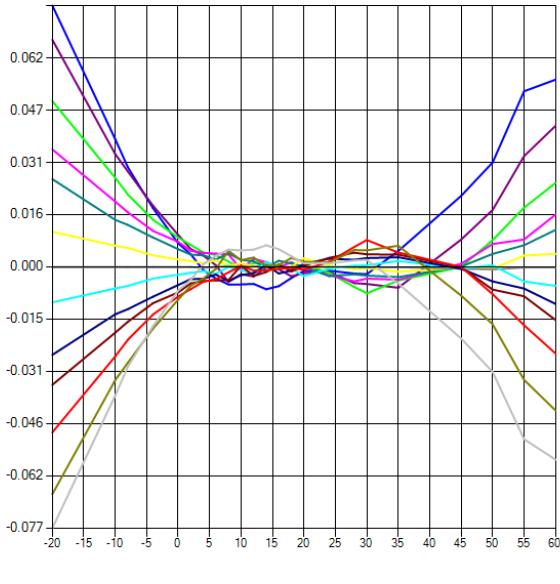
ROLLING MOMENT INCREMENT DUE TO RIGHT WING TANK



YAW

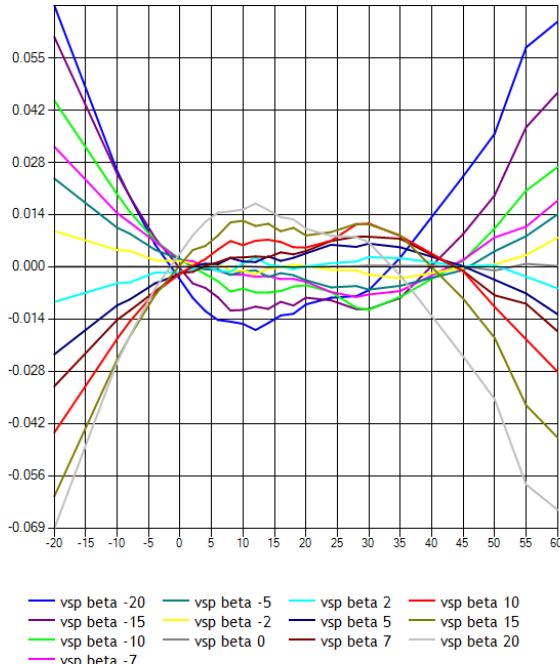
BASE YAWING MOMENT

CMN1 (alpha,beta,elevator=-25)



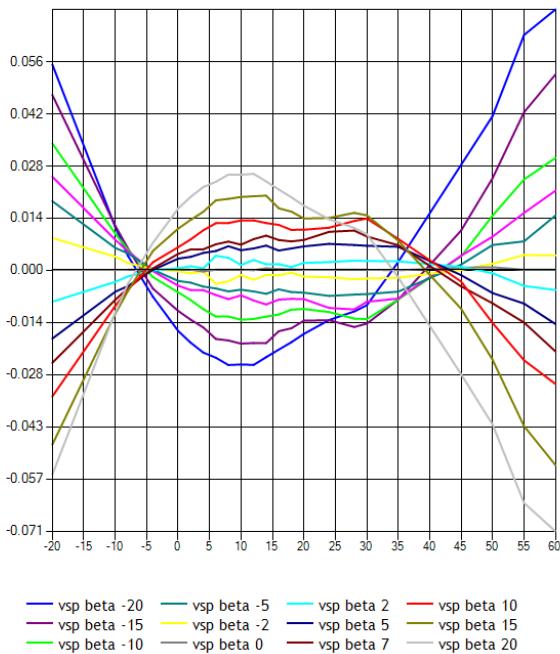
BASE YAWING MOMENT

CMN1 (alpha,beta,elevator=-20)



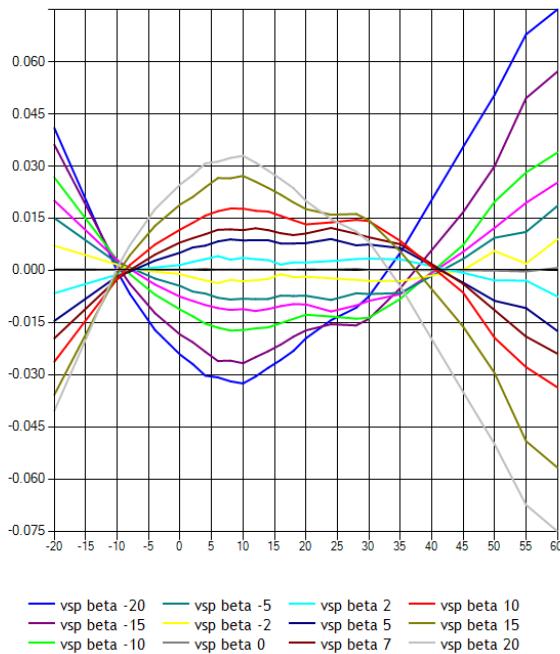
BASE YAWING MOMENT

CMN1 (alpha,beta,elevator=-15)



BASE YAWING MOMENT

CMN1 (alpha,beta,elevator=-10)



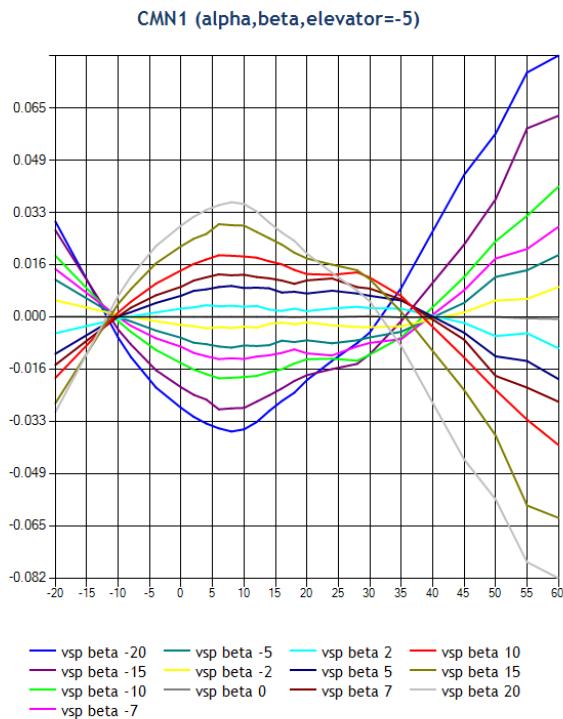
Legend for vsp beta values:

- vsp beta -20
- vsp beta -15
- vsp beta -10
- vsp beta -5
- vsp beta 0
- vsp beta 5
- vsp beta 10
- vsp beta 15
- vsp beta 20
- vsp beta 25
- vsp beta 30
- vsp beta 35
- vsp beta 40
- vsp beta 45
- vsp beta 50
- vsp beta 55
- vsp beta 60

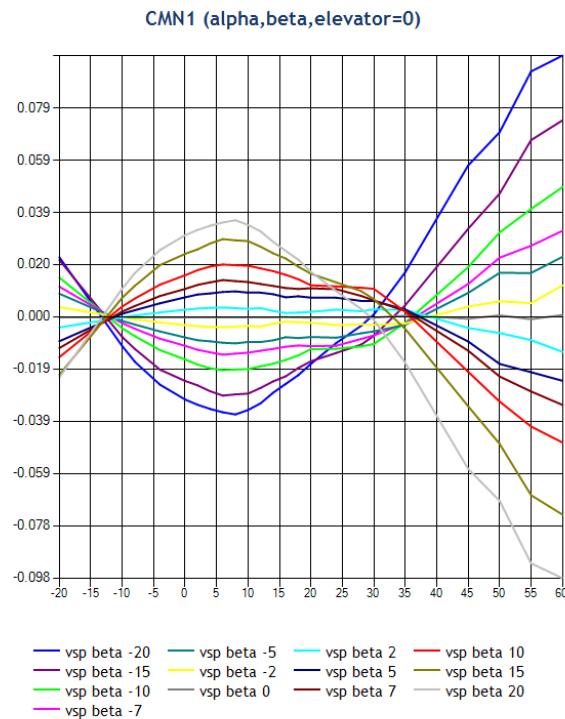
Legend for vsp beta values:

- vsp beta -20
- vsp beta -15
- vsp beta -10
- vsp beta -5
- vsp beta 0
- vsp beta 5
- vsp beta 10
- vsp beta 15
- vsp beta 20
- vsp beta 25
- vsp beta 30
- vsp beta 35
- vsp beta 40
- vsp beta 45
- vsp beta 50
- vsp beta 55
- vsp beta 60

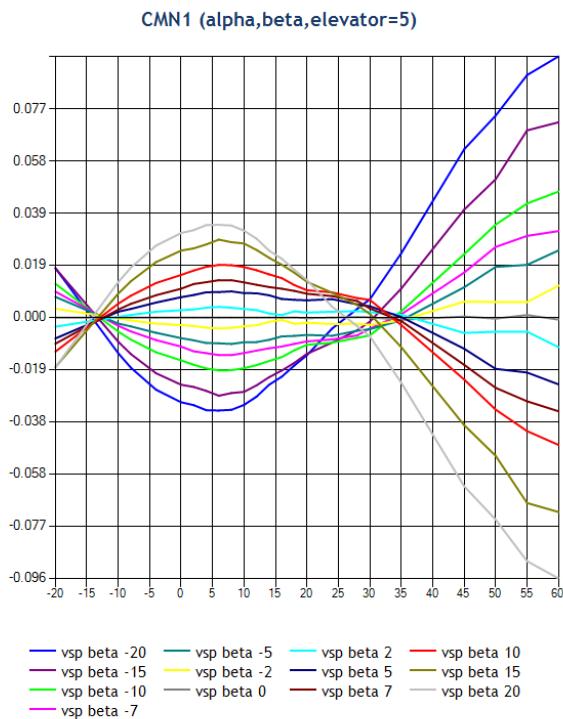
BASE YAWING MOMENT



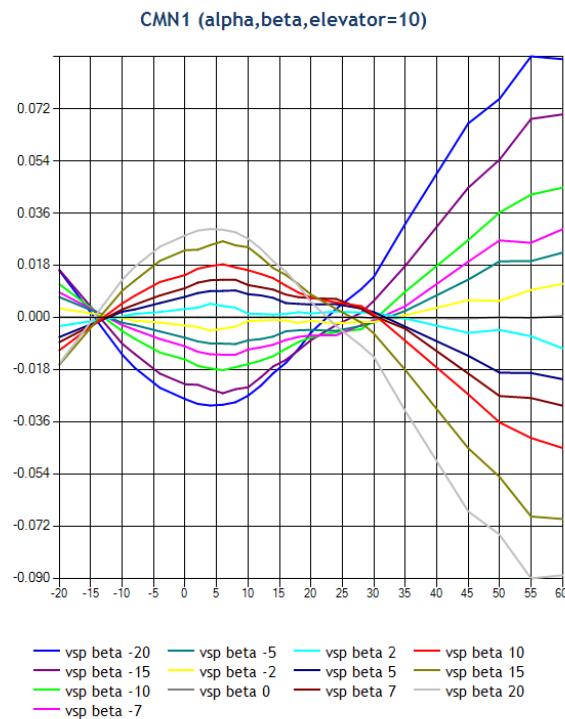
BASE YAWING MOMENT



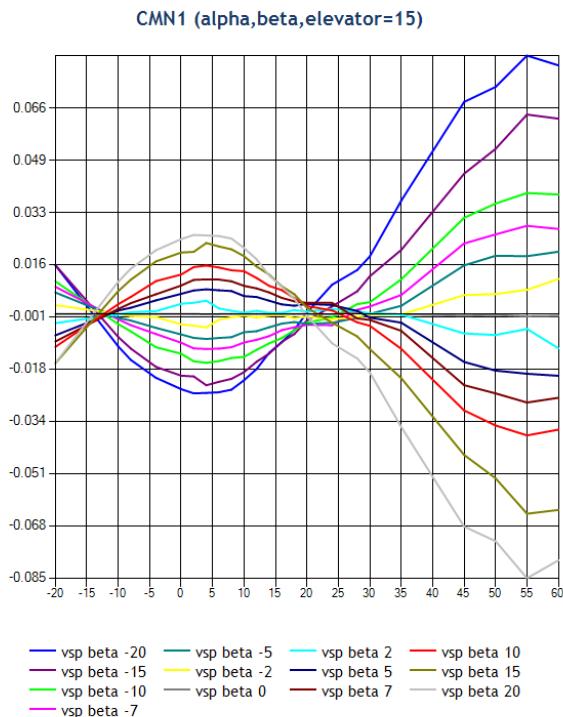
BASE YAWING MOMENT



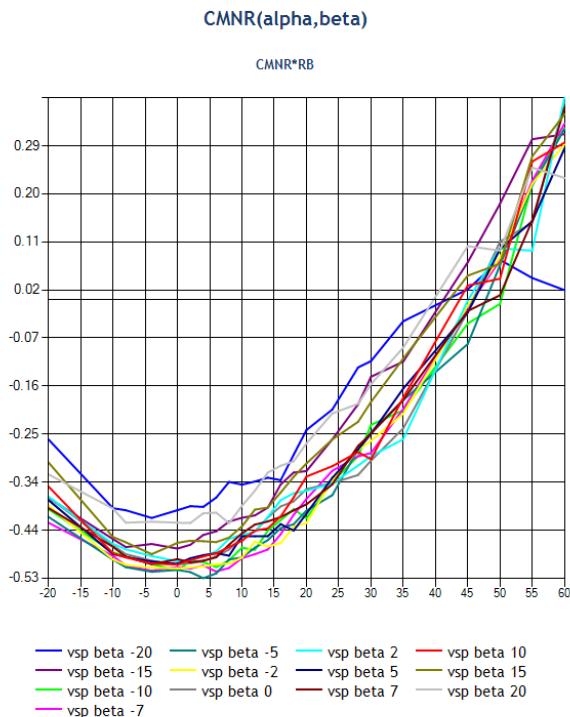
BASE YAWING MOMENT



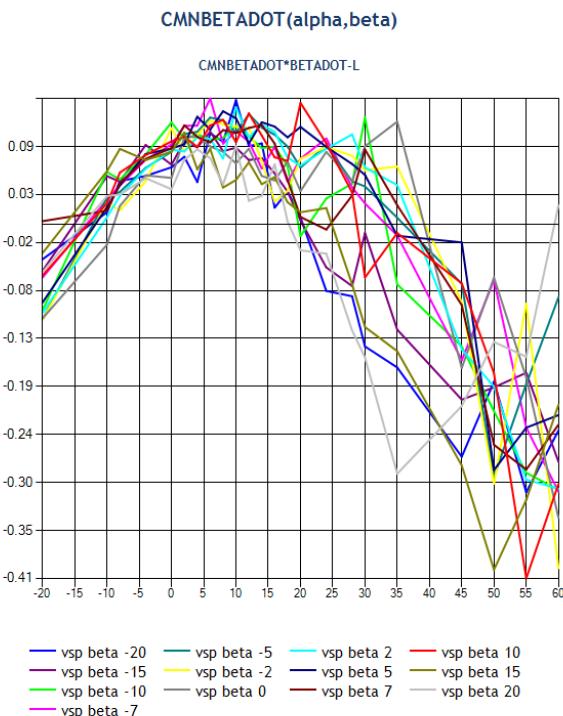
BASE YAWING MOMENT



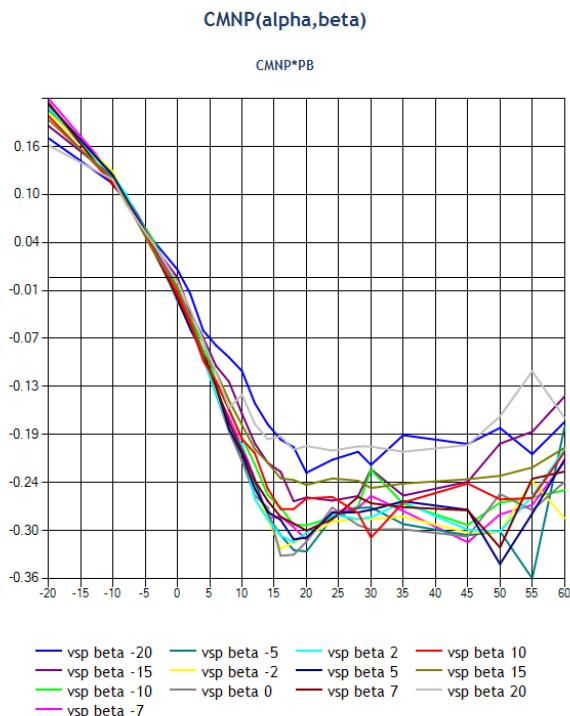
YAW DAMPING DERIVATIVE



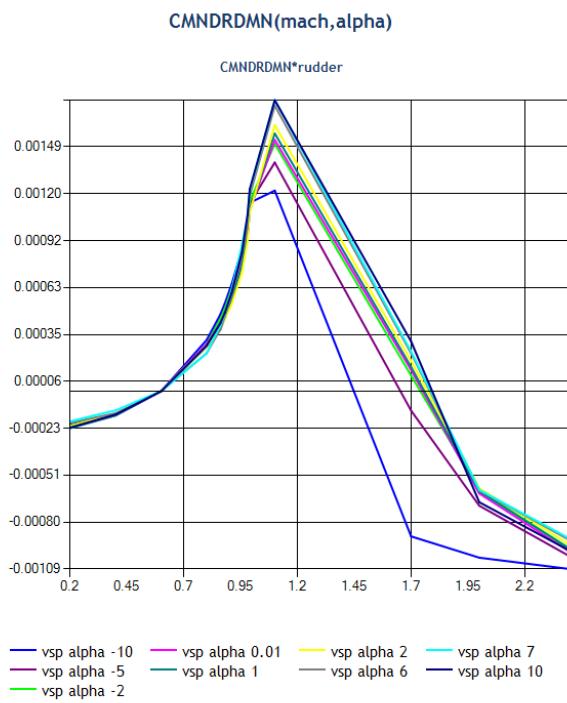
YAW DERIVATIVE MOMENT DUE TO BETADOT



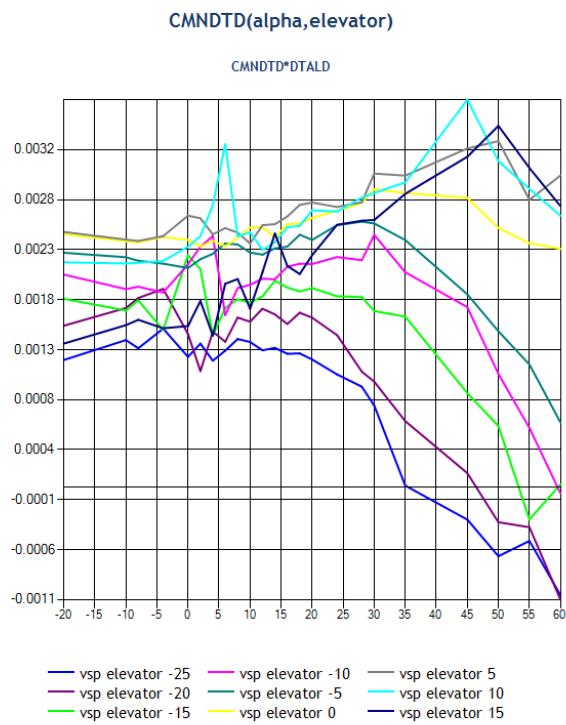
YAW DERIVATIVE MOMENT DUE TO ROLL RATE



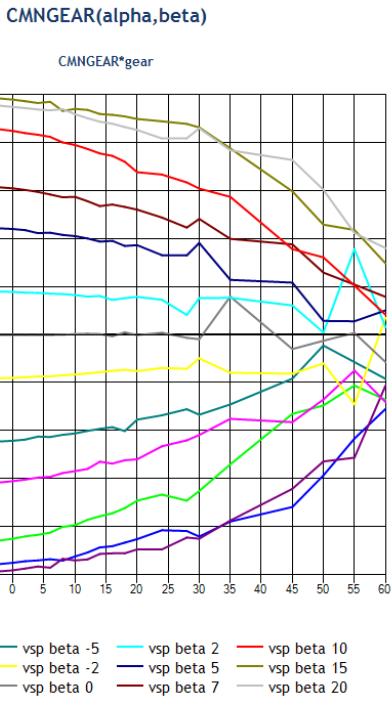
YAWING MOMENT CHANGE DUE TO MACH DUE TO RUDDER DEFLECTION



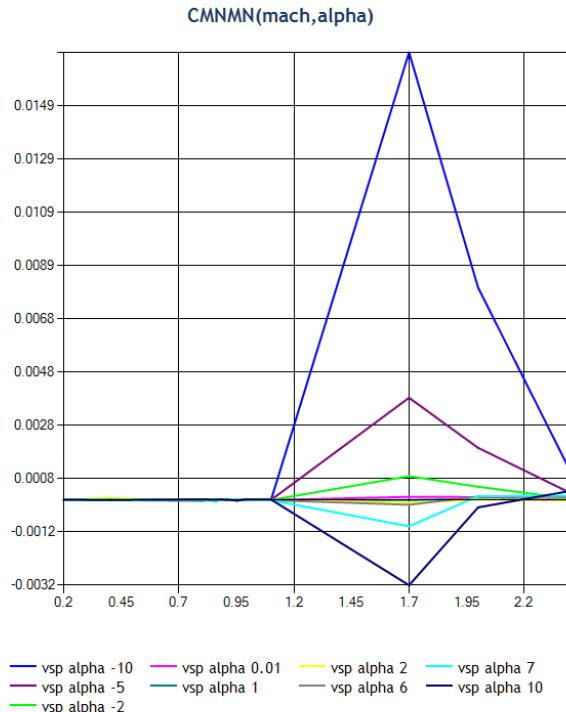
YAWING MOMENT DUE TO DIFFERENTIAL TAIL DEFLECTION



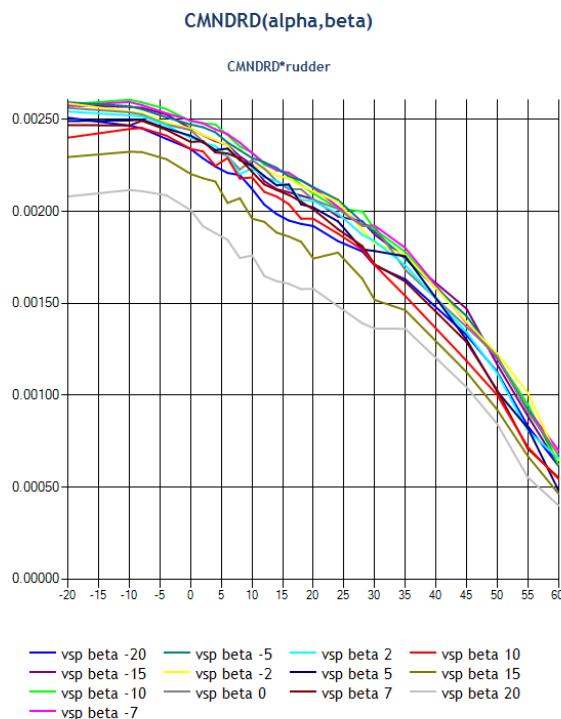
YAWING MOMENT DUE TO GEAR



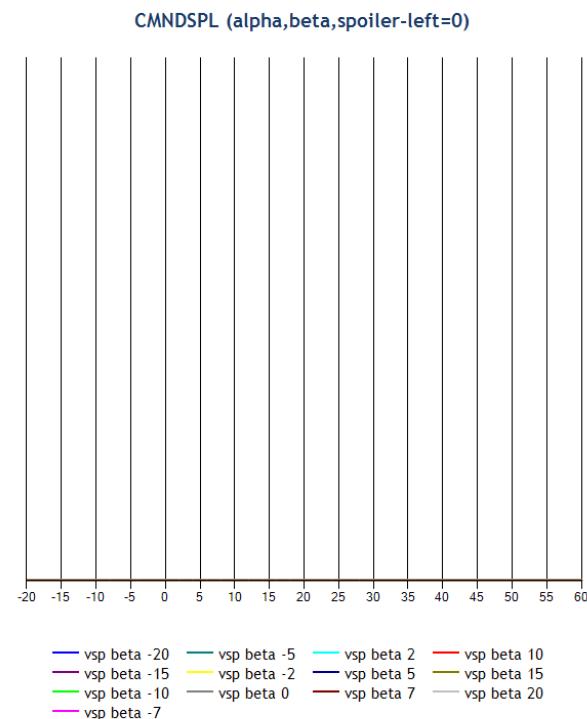
YAWING MOMENT DUE TO MACH



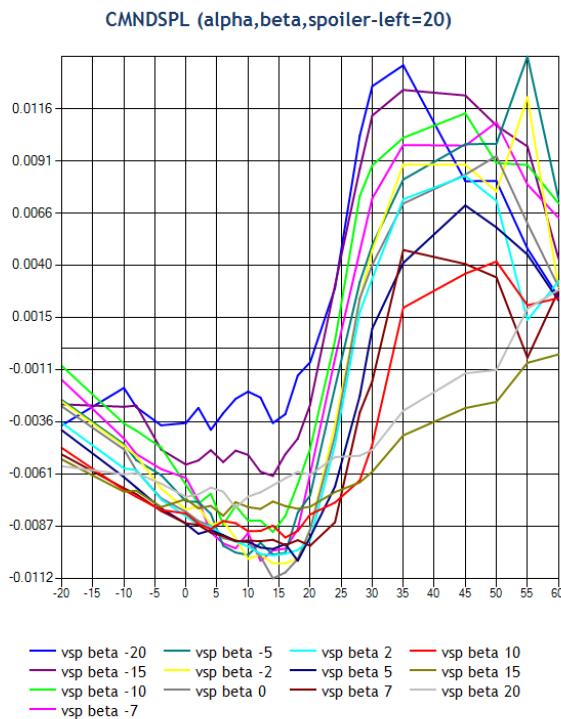
YAWING MOMENT DUE TO RUDDER DEFLECTION



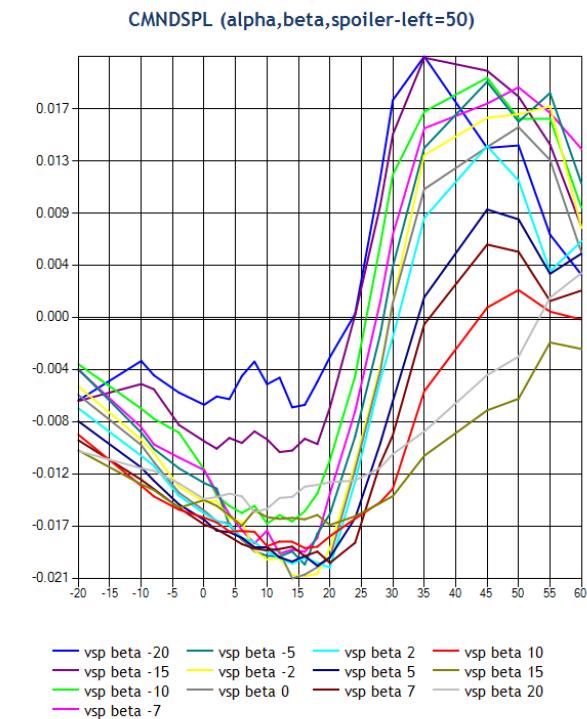
YAWING MOMENT DUE TO SPOILERS LEFT



YAWING MOMENT DUE TO SPOILERS LEFT

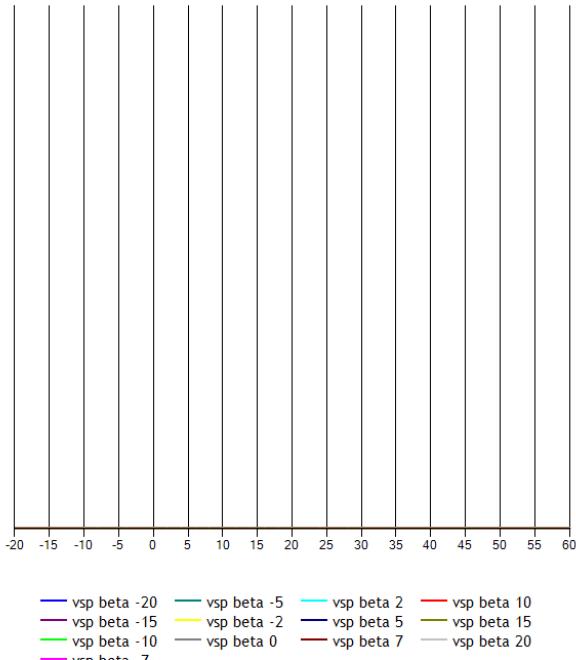


YAWING MOMENT DUE TO SPOILERS LEFT



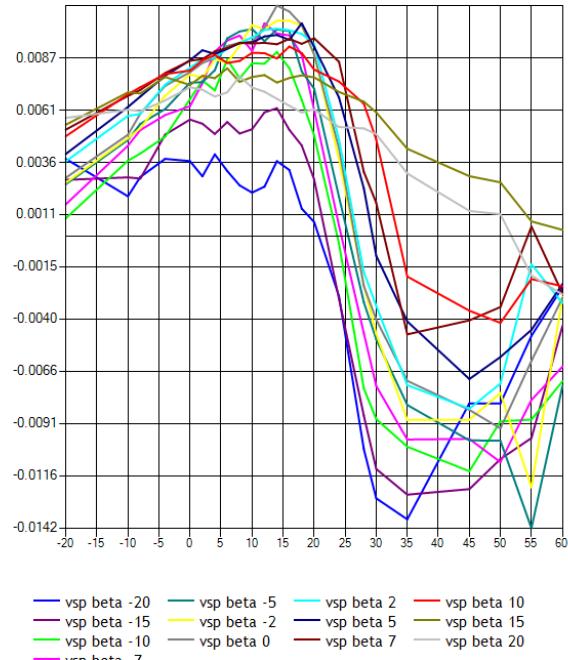
YAWING MOMENT DUE TO SPOILERS RIGHT

CMNDSPR (alpha,beta,spoiler-right=0)



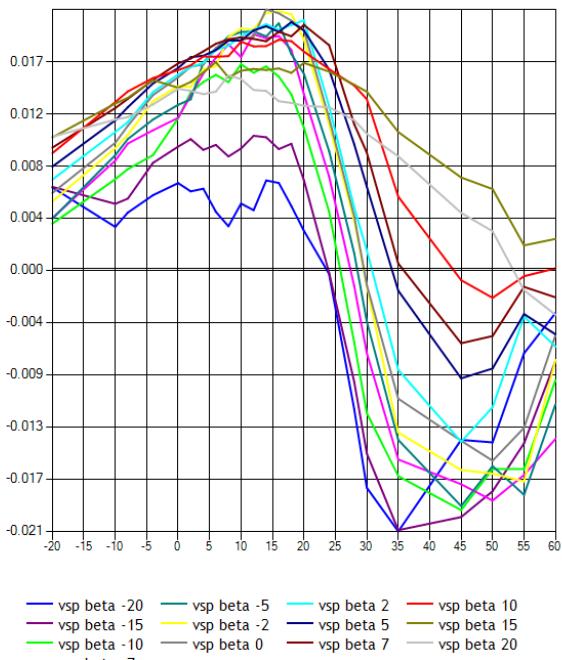
YAWING MOMENT DUE TO SPOILERS RIGHT

CMNDSPR (alpha,beta,spoiler-right=20)



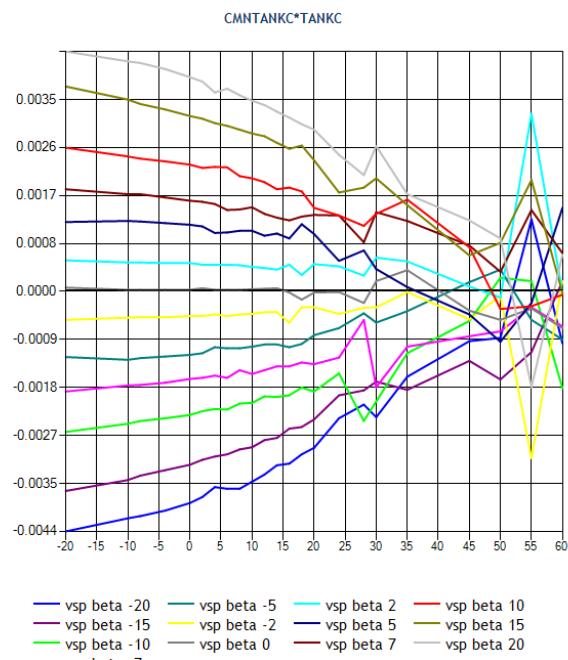
YAWING MOMENT DUE TO SPOILERS RIGHT

CMNDSPR (alpha,beta,spoiler-right=50)

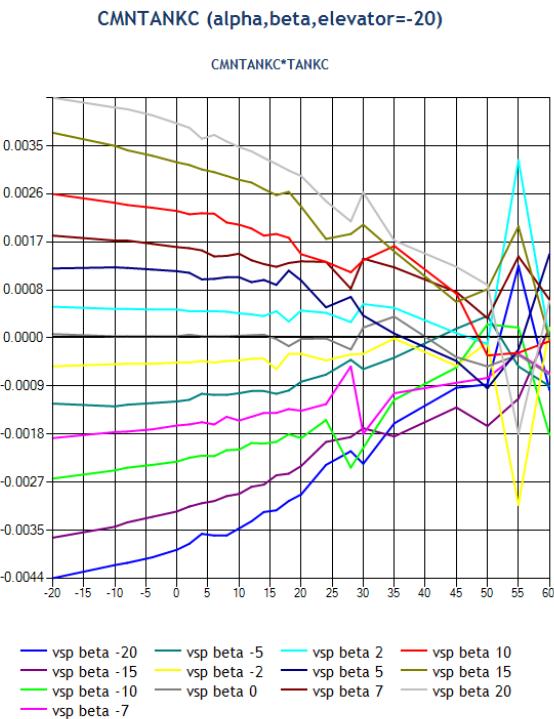


YAWING MOMENT INCREMENT DUE TO CENTRE TANK

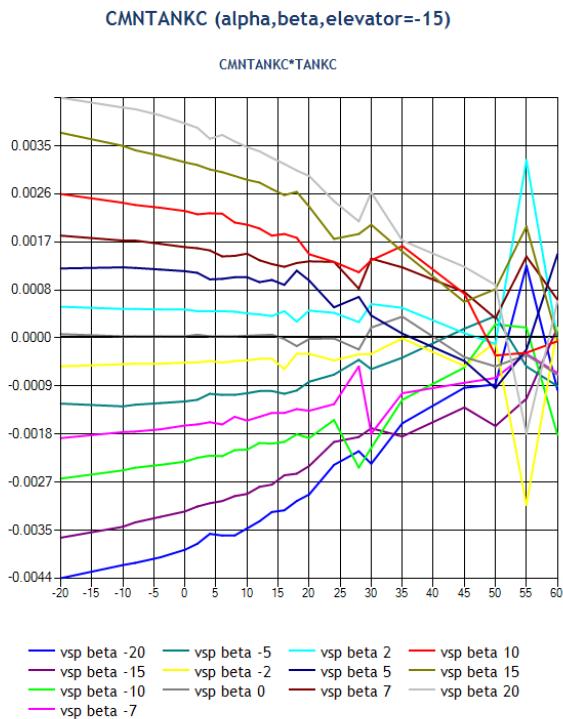
CMNTANKC (alpha,beta,elevator=-25)



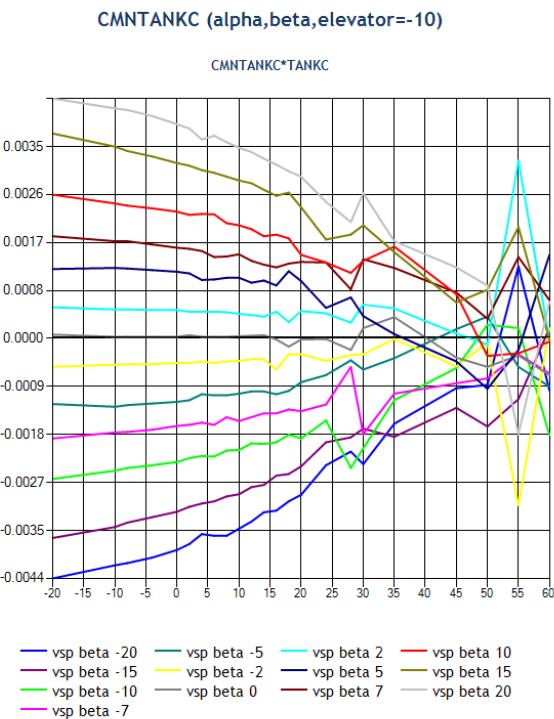
YAWING MOMENT INCREMENT DUE TO CENTRE TANK



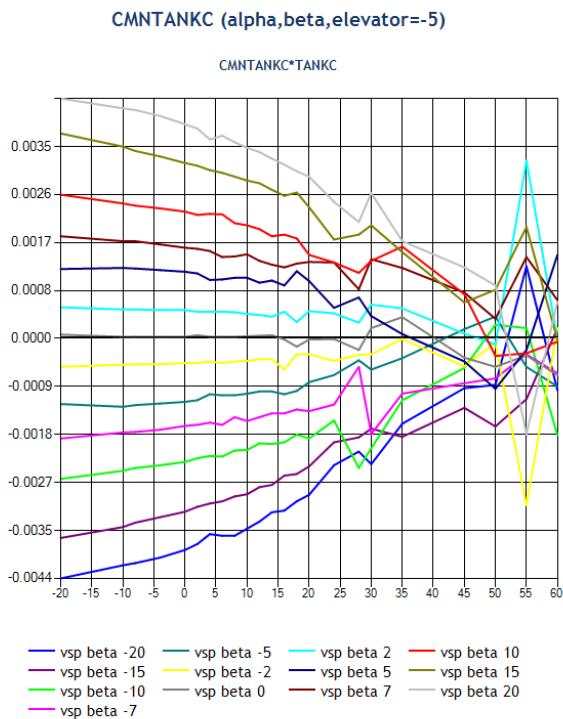
YAWING MOMENT INCREMENT DUE TO CENTRE TANK



YAWING MOMENT INCREMENT DUE TO CENTRE TANK

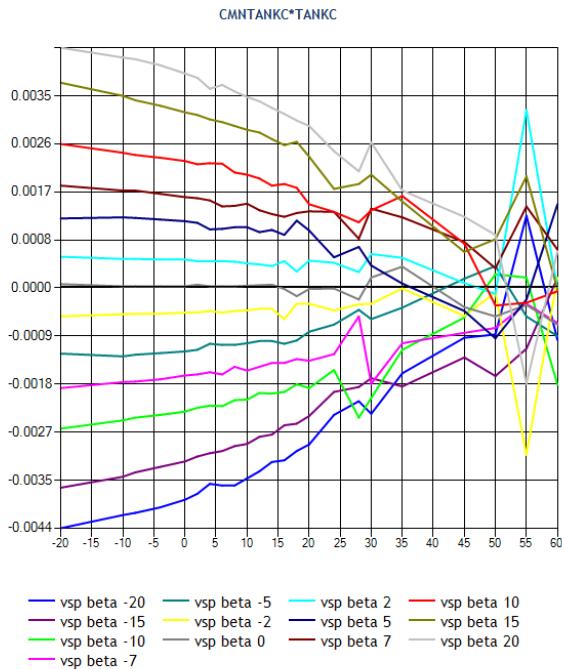


YAWING MOMENT INCREMENT DUE TO CENTRE TANK



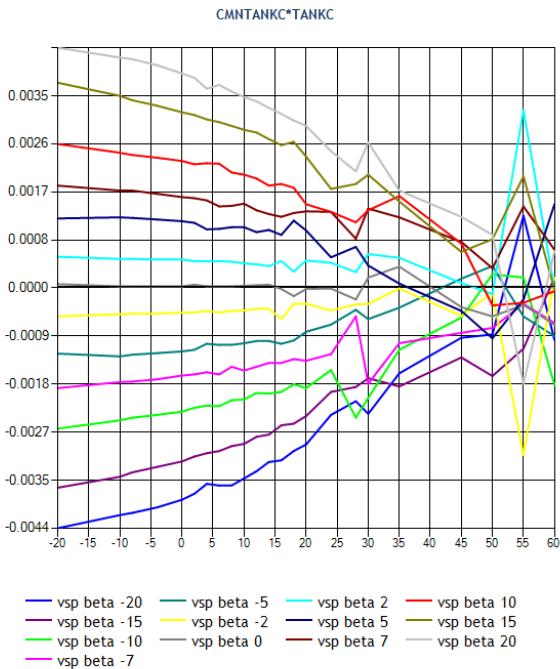
YAWING MOMENT INCREMENT DUE TO CENTRE TANK

CMNTANKC (alpha,beta,elevator=0)



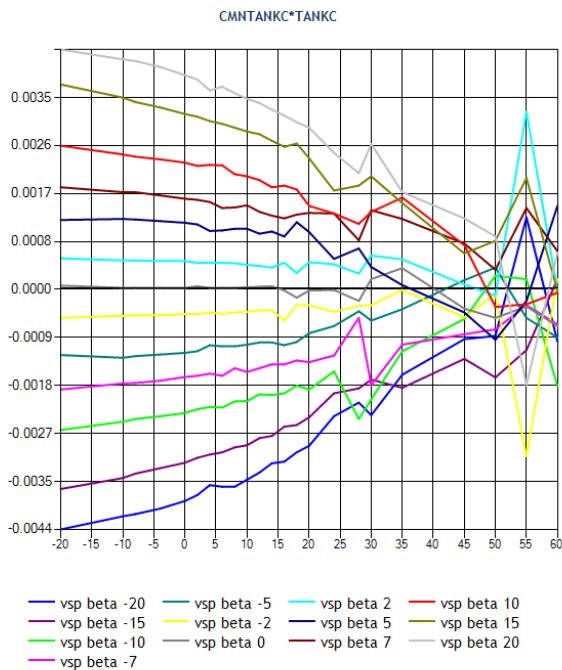
YAWING MOMENT INCREMENT DUE TO CENTRE TANK

CMNTANKC (alpha,beta,elevator=5)



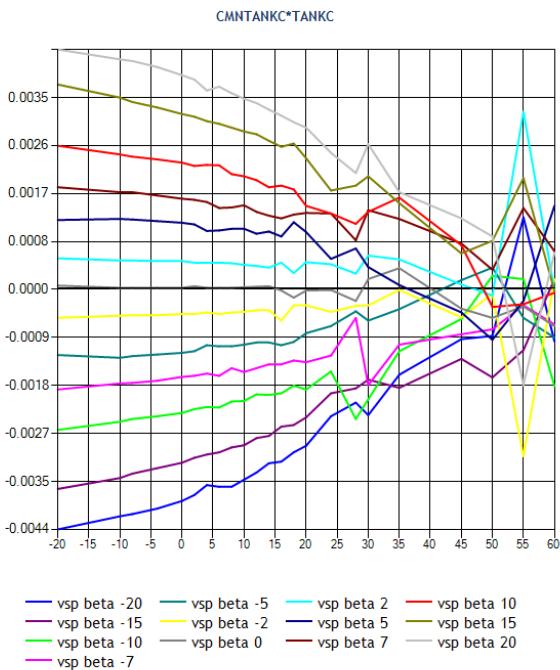
YAWING MOMENT INCREMENT DUE TO CENTRE TANK

CMNTANKC (alpha,beta,elevator=10)



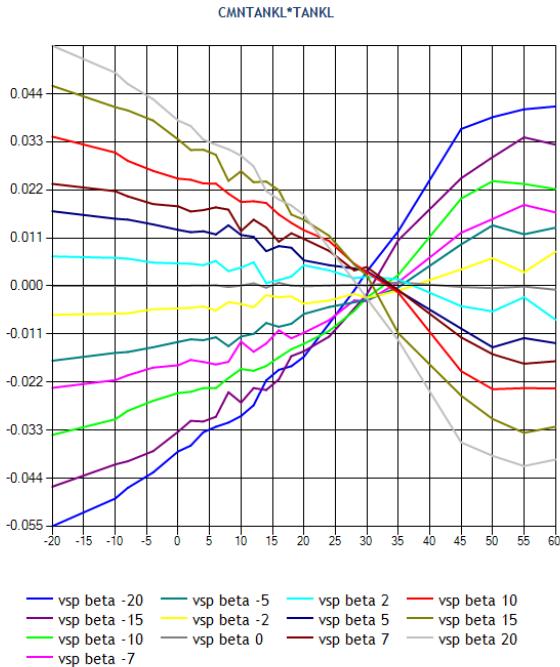
YAWING MOMENT INCREMENT DUE TO CENTRE TANK

CMNTANKC (alpha,beta,elevator=15)



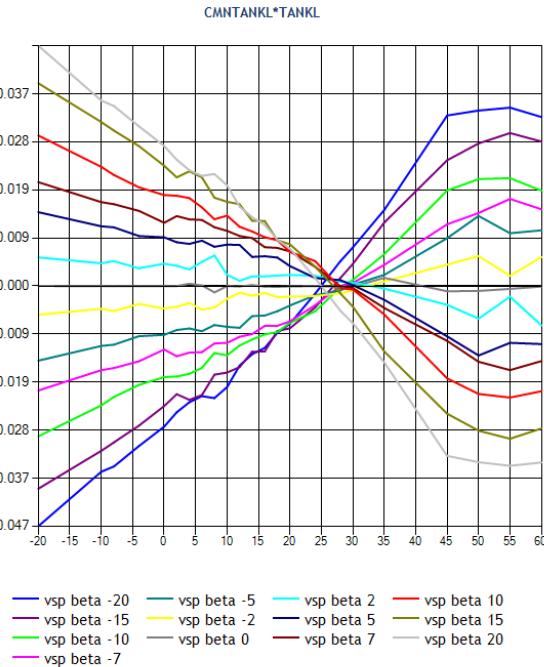
YAWING MOMENT INCREMENT DUE TO LEFT WING TANK

CMNTANKL (alpha,beta,elevator=-25)



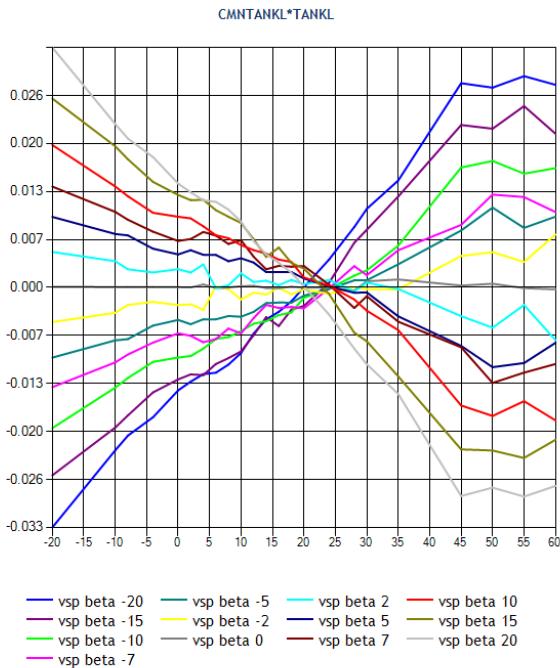
YAWING MOMENT INCREMENT DUE TO LEFT WING TANK

CMNTANKL (alpha,beta,elevator=-20)



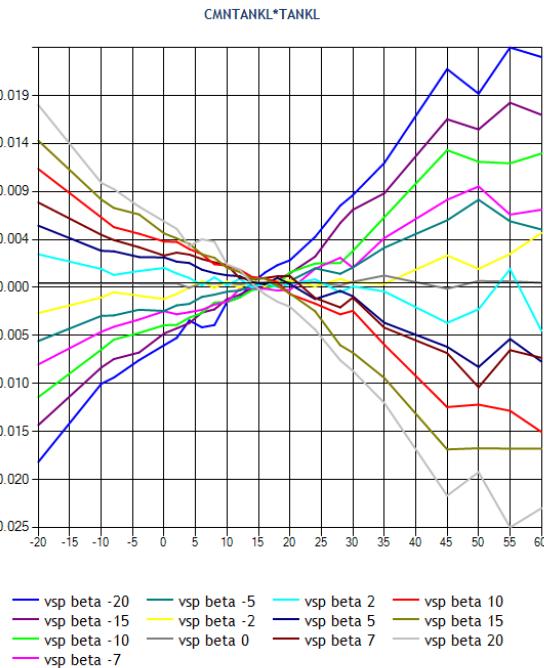
YAWING MOMENT INCREMENT DUE TO LEFT WING TANK

CMNTANKL (alpha,beta,elevator=-15)



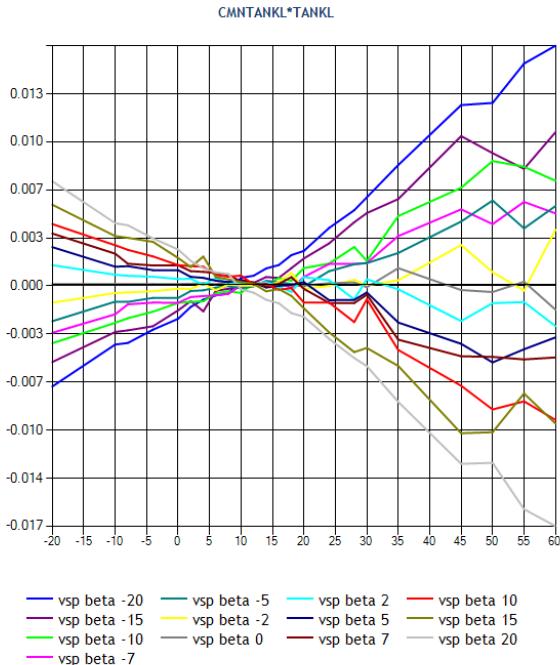
YAWING MOMENT INCREMENT DUE TO LEFT WING TANK

CMNTANKL (alpha,beta,elevator=-10)



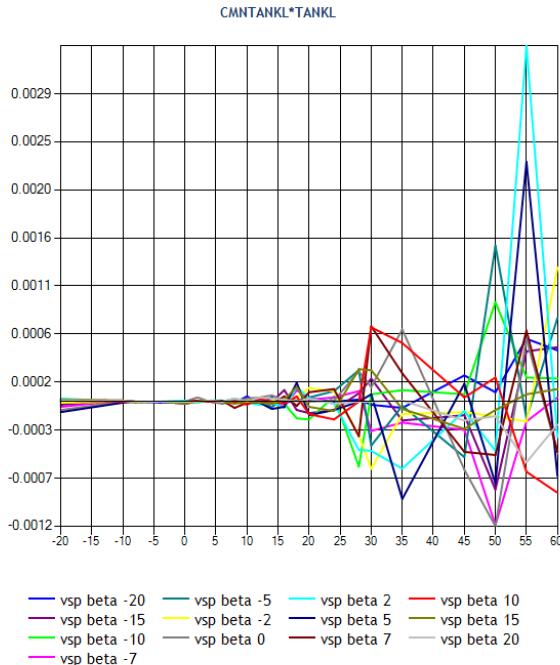
YAWING MOMENT INCREMENT DUE TO LEFT WING TANK

CMNTANKL (alpha,beta,elevator=-5)



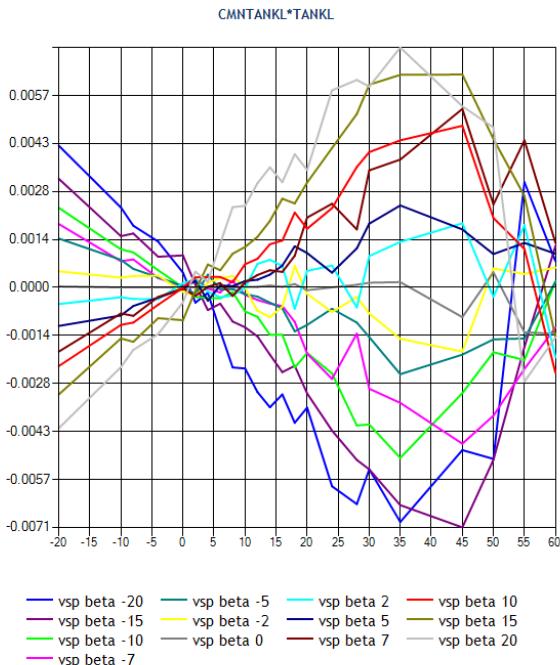
YAWING MOMENT INCREMENT DUE TO LEFT WING TANK

CMNTANKL (alpha,beta,elevator=0)



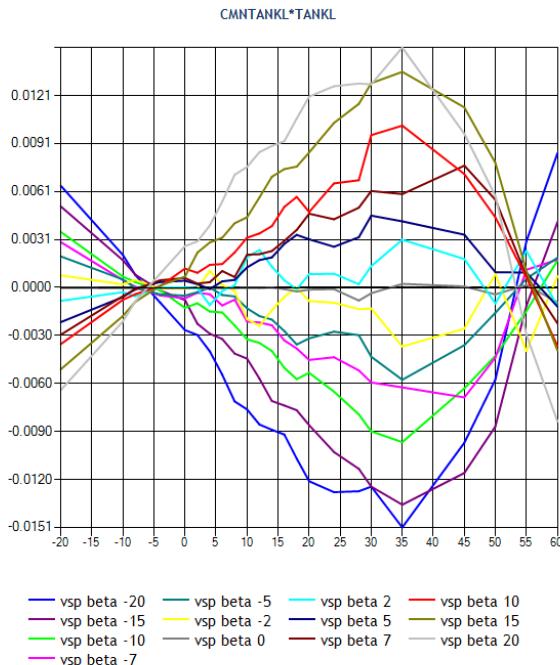
YAWING MOMENT INCREMENT DUE TO LEFT WING TANK

CMNTANKL (alpha,beta,elevator=5)



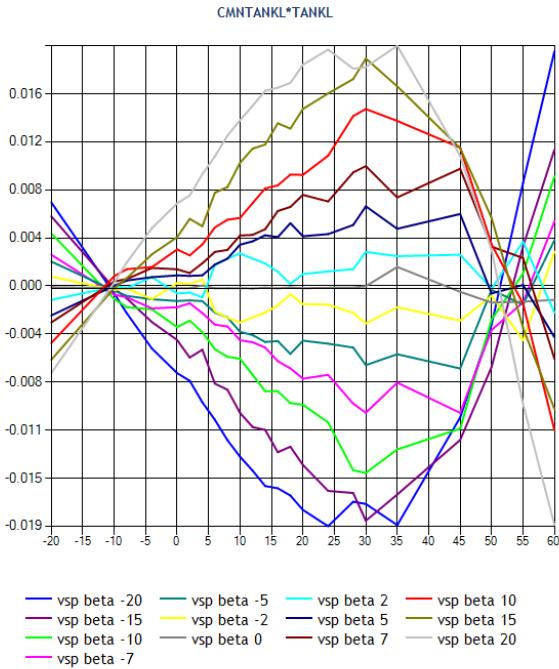
YAWING MOMENT INCREMENT DUE TO LEFT WING TANK

CMNTANKL (alpha,beta,elevator=10)



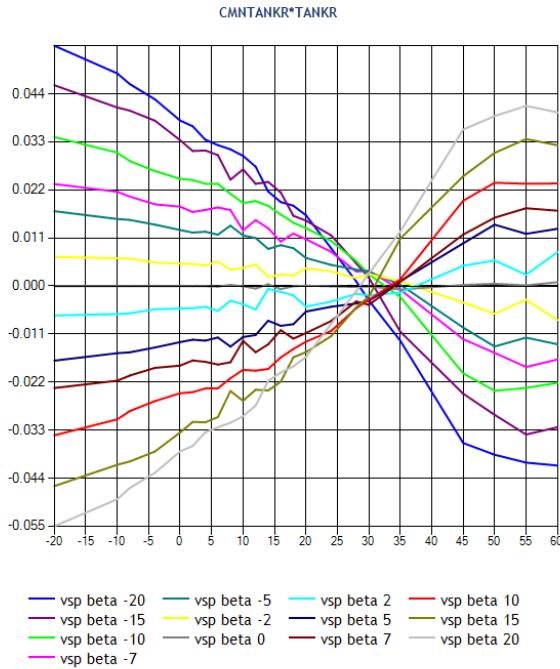
YAWING MOMENT INCREMENT DUE TO LEFT WING TANK

CMNTANKL (alpha,beta,elevator=15)



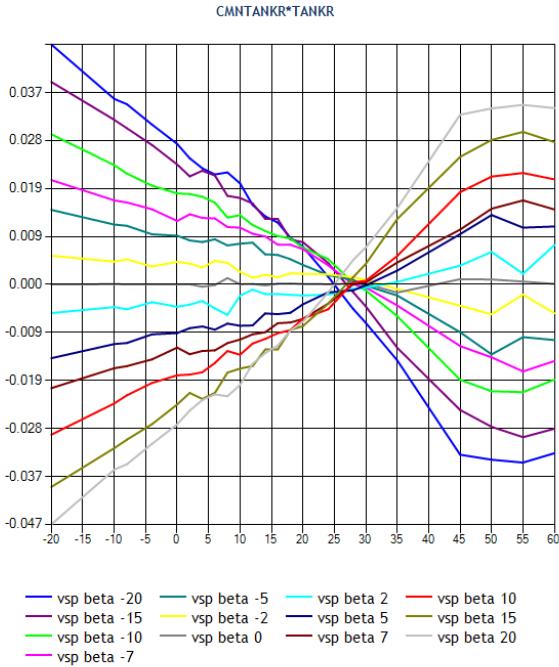
YAWING MOMENT INCREMENT DUE TO RIGHT WING TANK

CMNTANKR (alpha,beta,elevator=-25)



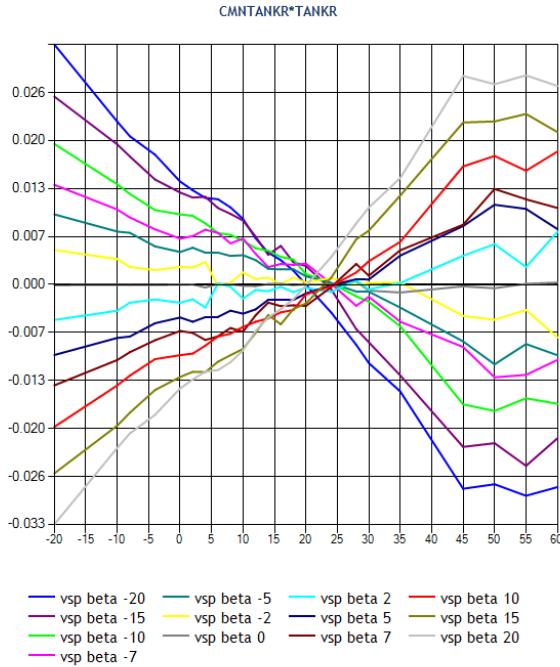
YAWING MOMENT INCREMENT DUE TO RIGHT WING TANK

CMNTANKR (alpha,beta,elevator=-20)



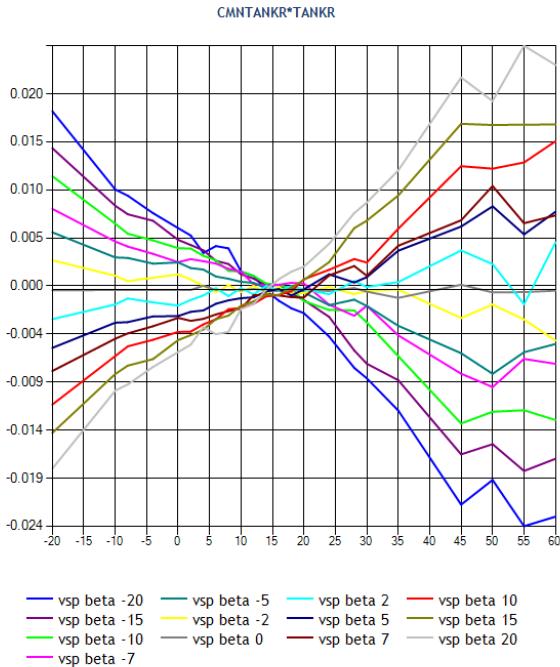
YAWING MOMENT INCREMENT DUE TO RIGHT WING TANK

CMNTANKR (alpha,beta,elevator=-15)



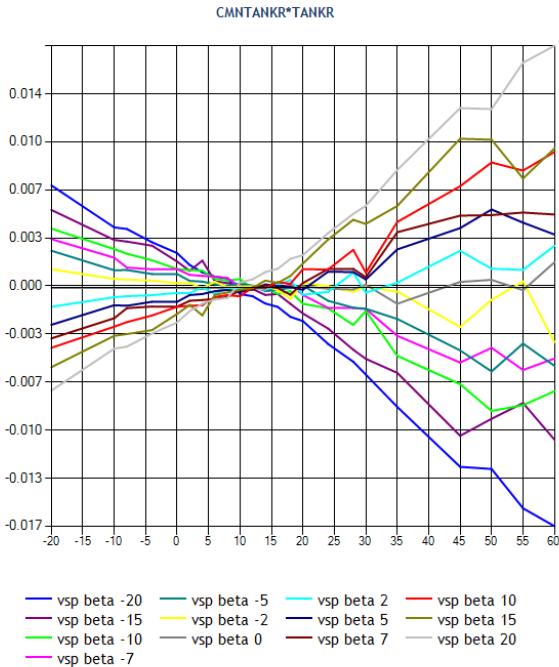
YAWING MOMENT INCREMENT DUE TO RIGHT WING TANK

CMNTANKR (alpha,beta,elevator=-10)



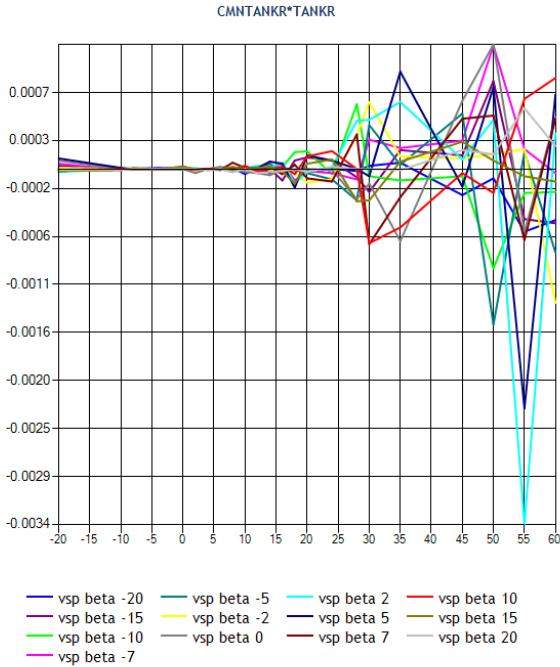
YAWING MOMENT INCREMENT DUE TO RIGHT WING TANK

CMNTANKR (alpha,beta,elevator=-5)



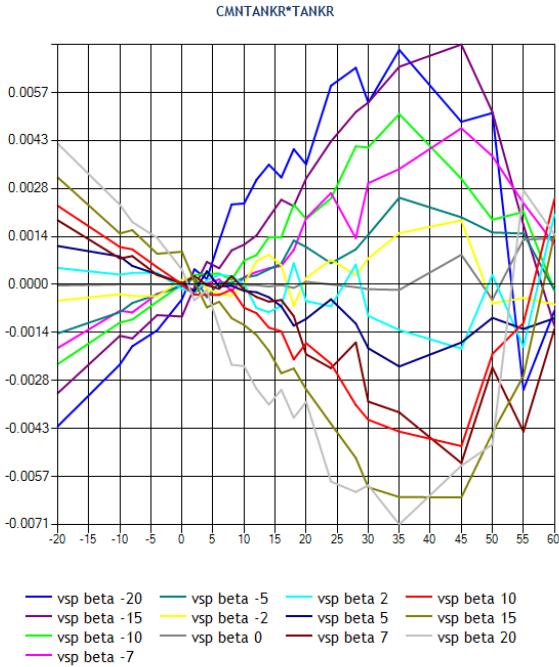
YAWING MOMENT INCREMENT DUE TO RIGHT WING TANK

CMNTANKR (alpha,beta,elevator=0)



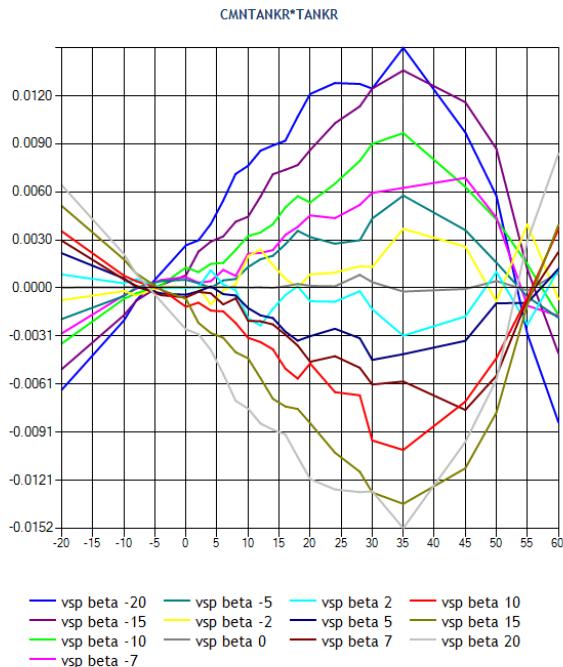
YAWING MOMENT INCREMENT DUE TO RIGHT WING TANK

CMNTANKR (alpha,beta,elevator=5)



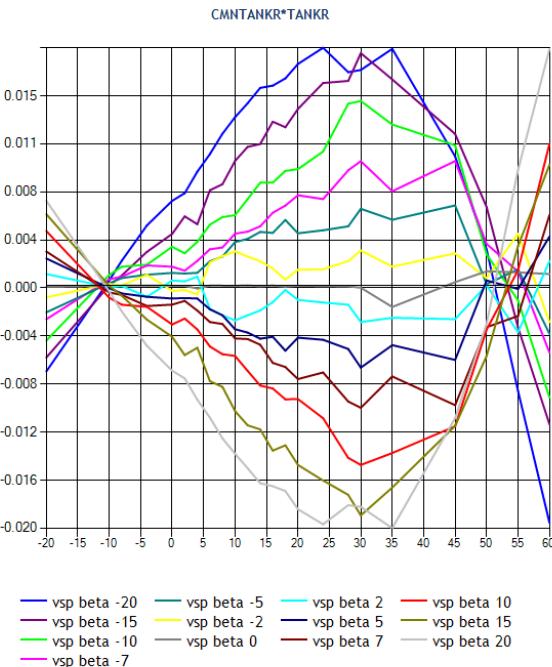
YAWING MOMENT INCREMENT DUE TO RIGHT WING TANK

CMNTANKR (alpha,beta,elevator=10)



YAWING MOMENT INCREMENT DUE TO RIGHT WING TANK

CMNTANKR (alpha,beta,elevator=15)



References

- Richard Harrison, rjh@zaretto.com: SEPECAT Jaguar Aerodynamic data built from vspaero; CG (8.4247, 0, -0.005)M, ZDAT/AED/2019/11-01, November, 2019: <http://www.zaretto.com/sites/zaretto.com/files/SEPECAT-Jaguar-data/rjh-zaretto-SEPECAT-Jaguar-aerodynamic-data-vspaero.pdf>
- Richard Harrison, rjh@zaretto.com: SEPECAT-Jaguar Aerodynamic, ZDAT/AED/2019/11-1, November 2019: <http://www.zaretto.com/sites/zaretto.com/files/SEPECAT-Jaguar-data/rjh-zaretto-SEPECAT-Jaguar-aerodynamic-data.pdf>

Aircraft Metrics

Element	X	Y	Z	Unit
Aerodynamic Reference Point (CoP)	8.62	0.00	-0.01	M
Aircraft CG	8.42	0.00	-0.01	M

Element	Unit
Wingspan	M
Wing Area	M ²
Wing Incidence	1.52
Chord	M
Horiz Tail Arm	0.00
CIMax	ND

Mass and balance

Element	Unit
Empty Weight	KG
I _{XX}	
I _{YY}	
I _{ZZ}	

DXZ

-804.00

Element	X	Y	Z	Unit	Weight
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Ground Reactions

Element	X	Y	Z	Unit	Index
NOSE_LG	3.20	0.00	-1.18	M	0
LEFT_MLG	9.28	-1.84	-1.08	M	1
RIGHT_MLG	9.28	1.84	-1.08	M	2
NOSE	0.30	0.00	1.89	M	3
FRONT_LOWER_FUSELAGE	1.65	0.00	-0.05	M	4
CANOPY	4.10	0.00	2.03	M	5
REAR_UPPER_FUSELAGE	11.49	0.00	2.02	M	6
REAR_LEFT_LOWER_FUSELAGE	11.78	-0.70	-0.32	M	7
REAR_RIGHT_LOWER_FUSELAGE	11.78	0.70	-0.32	M	8
LEFT_WING	11.23	-4.88	1.09	M	9
RIGHT_WING	11.23	4.88	1.09	M	10
LEFT_HTAIL	16.02	-2.42	1.00	M	11
RIGHT_HTAIL	16.02	2.42	1.00	M	12
VTAIL	15.72	0.00	3.13	M	13

Propulsion

Element	X	Y	Z	Unit	Feed
Adour804	12.92	-0.41	-0.20	M	LeftWingTank [1],CentreTank [2]
Adour804	12.92	0.41	-0.20	M	RightWingTank [0],CentreTank [2]

Tanks

Element	X	Y	Z	Unit	Capacity	Id	Priority	Standpipe
RightWingTank	9.22	2.09	0.01	M	3470 LBS	0	2	100 LBS
LeftWingTank	9.22	-2.09	0.01	M	3470 LBS	1	2	100 LBS
CentreTank	8.12	0.00	-0.31	M	4420 LBS	2	1	100 LBS

Systems

Name
Propulsion
autoflight
jaguar-sas
Aircraftcontrol
jaguar-controls

electrical

hydraulics

Independent variables

Name

aero/alpha-deg

aero/alphadot-rad_sec

aero/beta-deg

aero/betadot-rad_sec

aero/pb

aero/qb

aero/rb

fcs/differential-elevator-pos-deg

fcs/flap-ob-pos-deg

fcs/flap-pos-deg

fcs/pitch-pos-deg

fcs/rudder-deg

fcs/slats-deg

fcs/speedbrake-pos-deg

fcs/spoiler-left-deg

fcs/spoiler-right-deg

gear/gear-pos-norm

mass/tank-centre-fitted

mass/tank-wing-left-fitted

mass/tank-wing-right-fitted

position/h-agl-m

velocities/mach
