SEPECAT-Jaguar aerodynamic model

Built using VSPAERO; Aerodynamic Datum (8.6247, 0, -0.005)M, 2020-09-10 01:55: 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
CFXDSL	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
CMMDRDMN	mach,alpha	PITCH	PITCH MOMENT CHANGE DUE TO MACH DUE TO RUDDER DEFLECTION
CMMDRD	alpha,beta	PITCH	PITCH MOMENT DUE TO RUDDER DEFLECTION
CMMDSL	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
CMMDGE	hmrc,alpha	PITCH	PITCHING MOMENT DUE TO GROUND EFFECT
CMMMN	mach,alpha	PITCH	PITCHING MOMENT DUE TO MACH
CMMBRK	alpha,beta	PITCH	PITCHING MOMENT DUE TO SPEEDBRAKE
CMMDSPL	alpha,beta,spoiler-left	PITCH	PITCHING MOMENT DUE TO SPOILERS LEFT
CMMDSPR	alpha,beta,spoiler-right	PITCH	PITCHING MOMENT DUE TO SPOILERS RIGHT
CMMTANKC	alpha,elevator	PITCH	PITCHING MOMENT INCREMENT DUE TO CENTRE TANK
CMMTANKL	alpha,elevator	PITCH	PITCHING MOMENT INCREMENT DUE TO LEFT WING TANK
CMMTANKR	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
CMLDRD	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 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
CMNDSPL	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

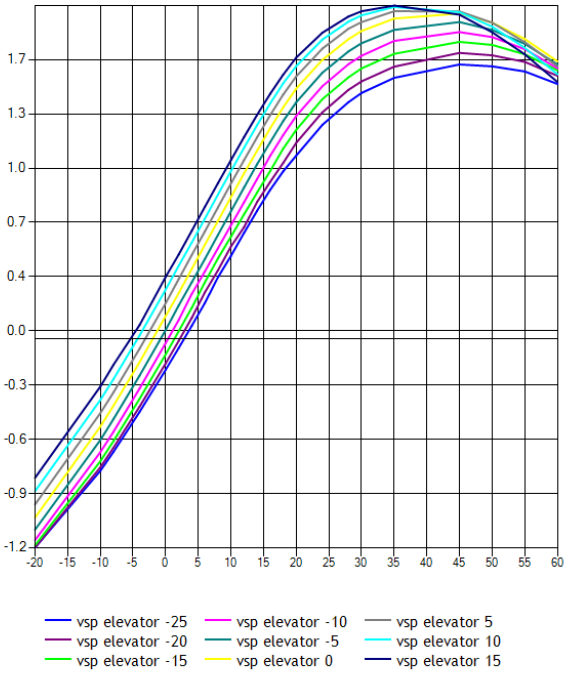
Coefficient Buildup

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 + CMMDRD*rudder + CMMDSL + CMMTANKC*TANKC + CMMTANKL*TANKL + CMMTANKR*TANKR + CMMBRK*speedbrake + CMMGEAR*gear + CMMFLAPS*flaps + CMMFLAPSOB*flaps1 + CMM1 + CMMDGE + CMMMN + CMMDRDMN*rudder + CMMALPHADOT*ALPHADOT-L + CMMQ*QB
YAW	CMNDSPL + 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

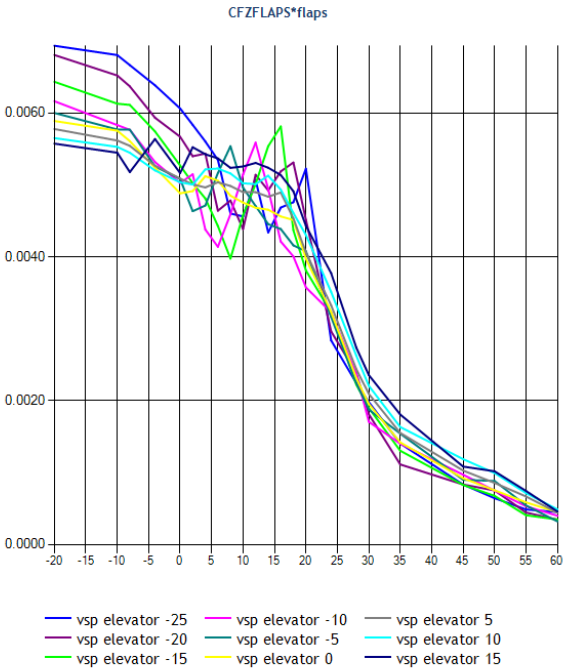
BASE LIFT

CFZB(alpha,elevator)



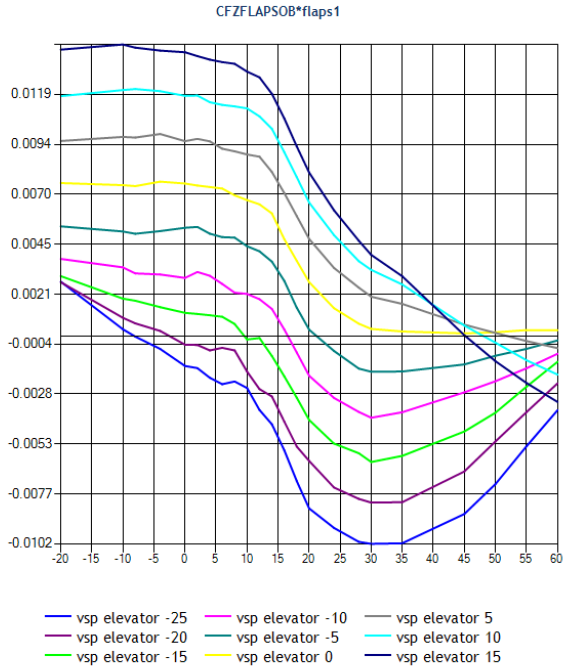
LIFT DUE TO FLAPS INBOARD

CFZFLAPS(alpha,elevator)



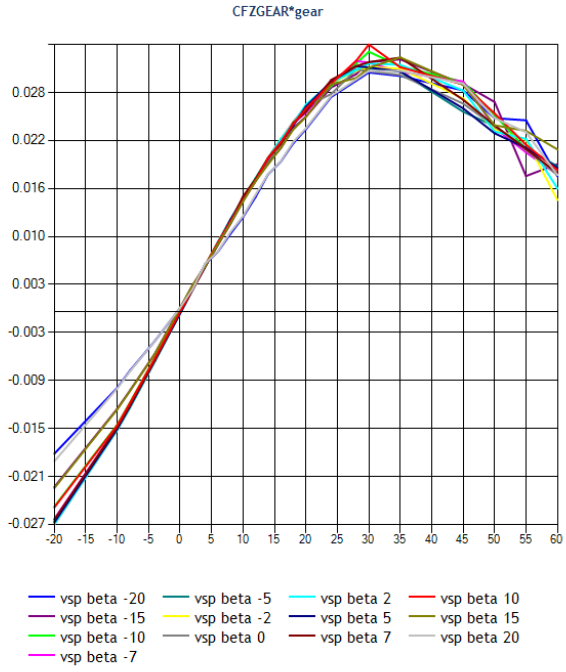
LIFT DUE TO FLAPS OUTBOARD

CFZFLAPSOB(alpha,elevator)



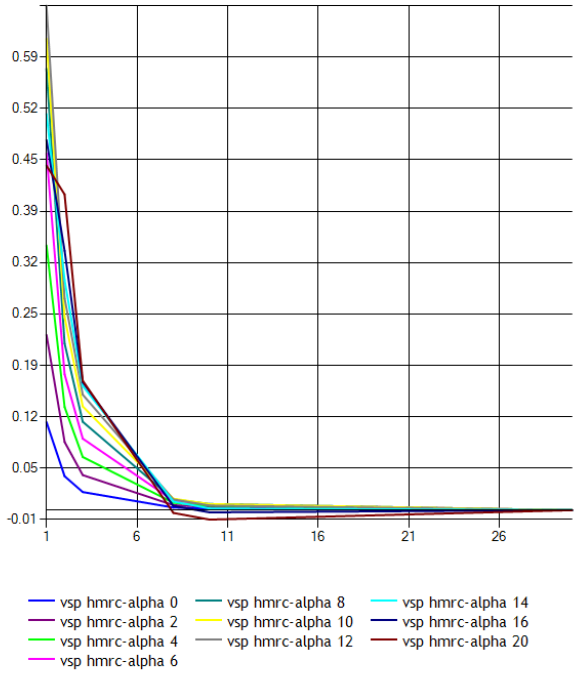
LIFT DUE TO GEAR

CFZGEAR(alpha,beta)



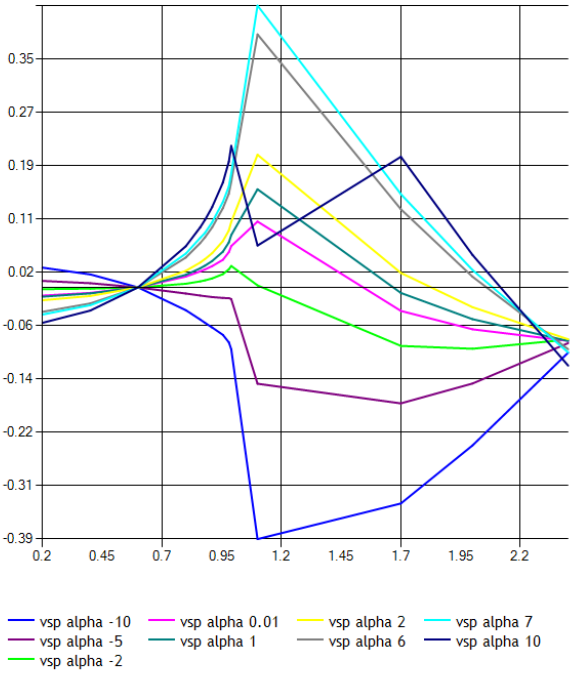
LIFT DUE TO GROUND EFFECT

CFZDGE(hmrc,hmrc-alpha)



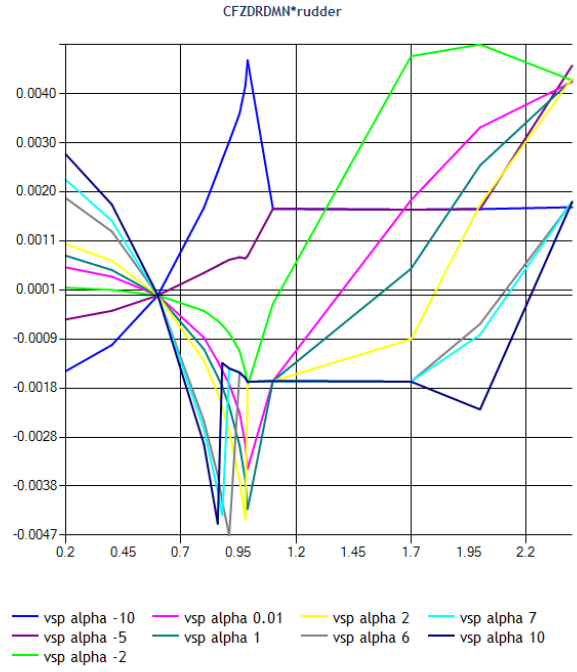
LIFT DUE TO MACH

CFZMN(mach,alpha)



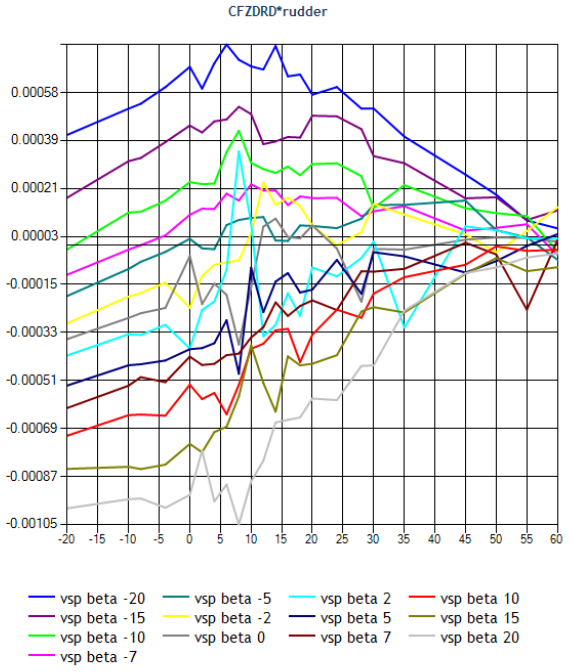
LIFT DUE TO MACH DUE TO RUDDER DEFLECTION

CFZDRDMN(mach,alpha)



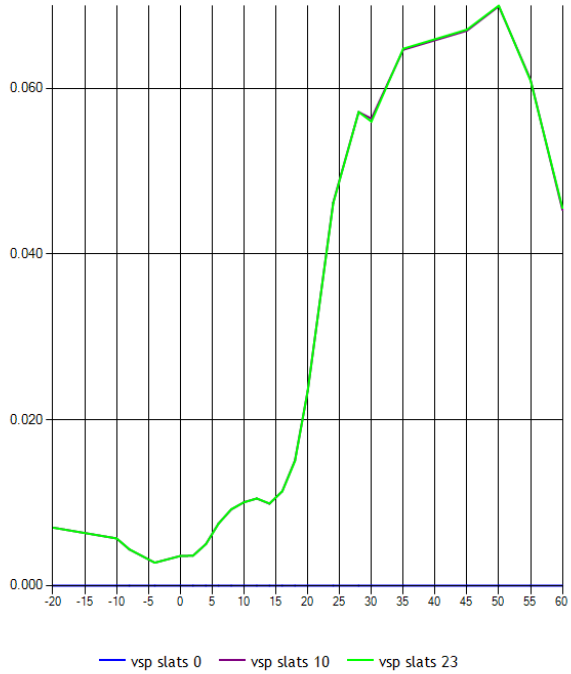
LIFT DUE TO RUDDER DEFLECTION

CFZDRD(alpha,beta)



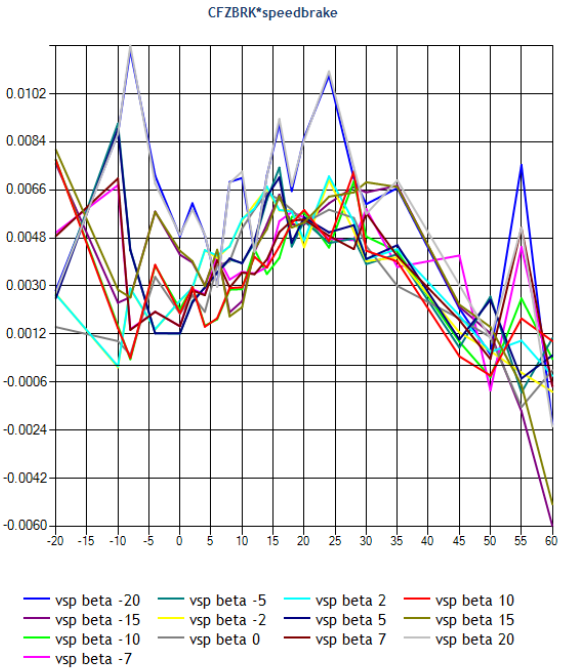
LIFT DUE TO SLATS

CFZDSL(alpha,slats)



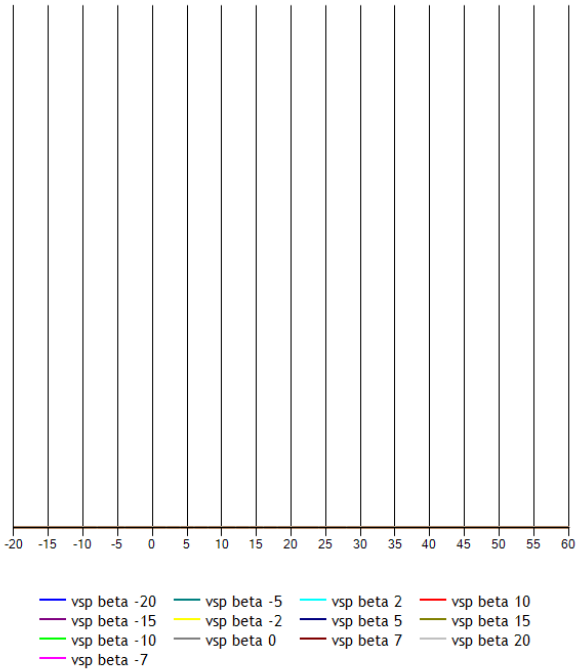
LIFT DUE TO SPEEDBRAKE

CFZBRK(alpha,beta)



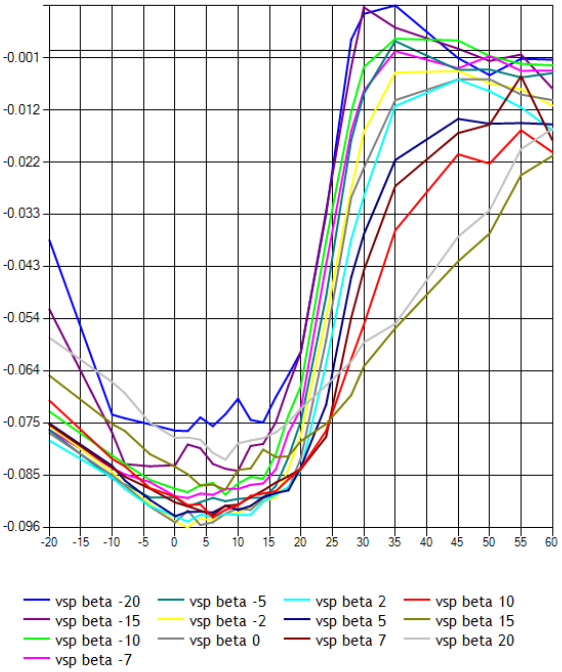
LIFT DUE TO SPOILERS LEFT

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



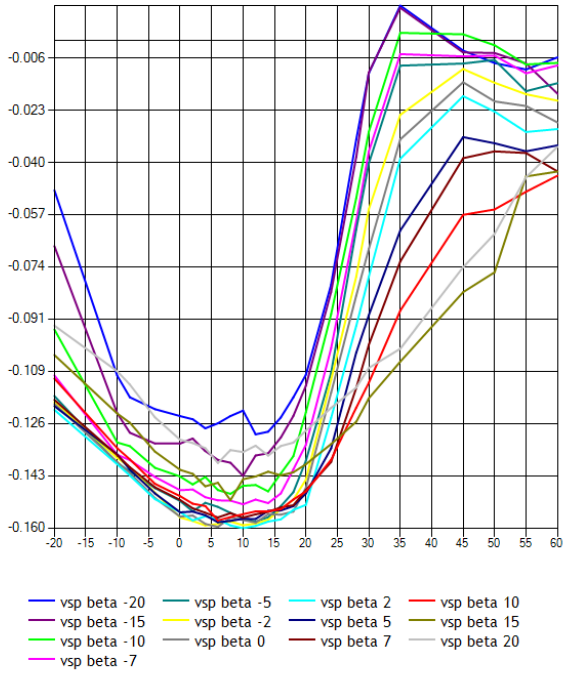
LIFT DUE TO SPOILERS LEFT

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



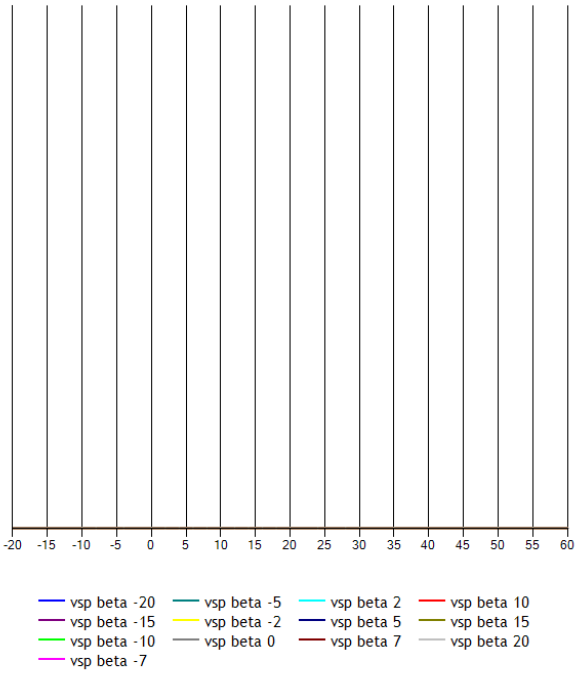
LIFT DUE TO SPOILERS LEFT

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



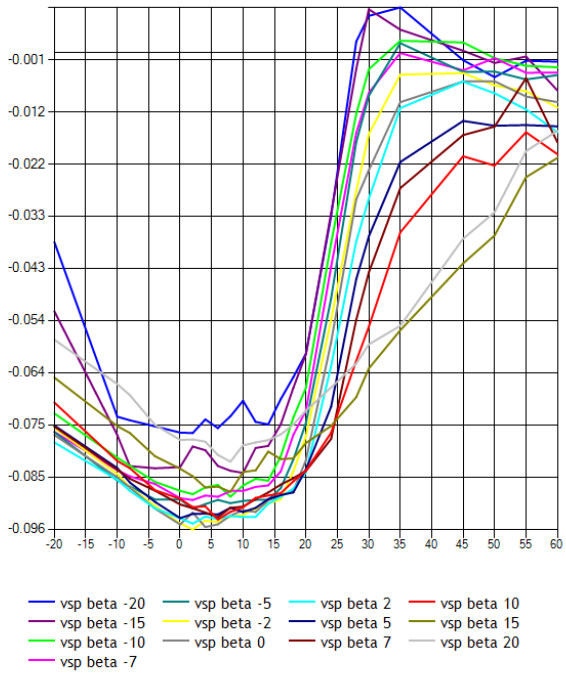
LIFT DUE TO SPOILERS RIGHT

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



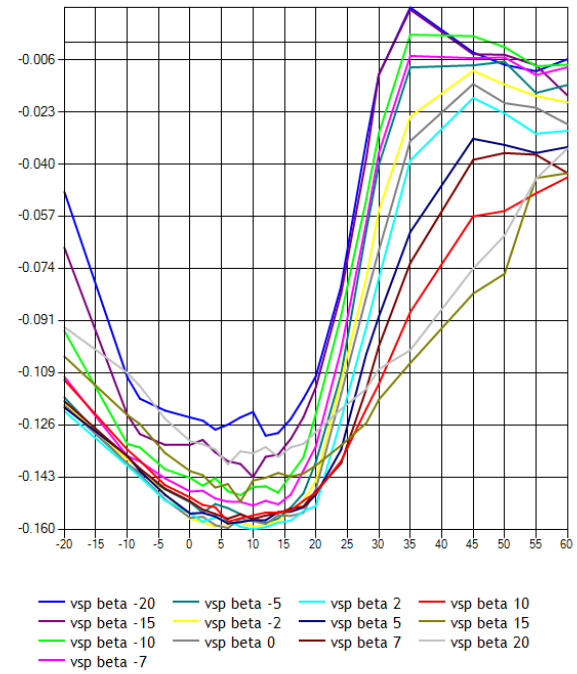
LIFT DUE TO SPOILERS RIGHT

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



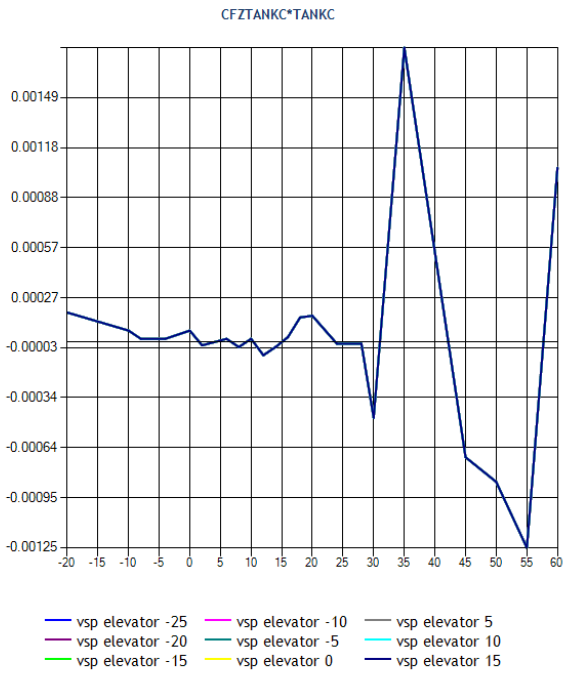
LIFT DUE TO SPOILERS RIGHT

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



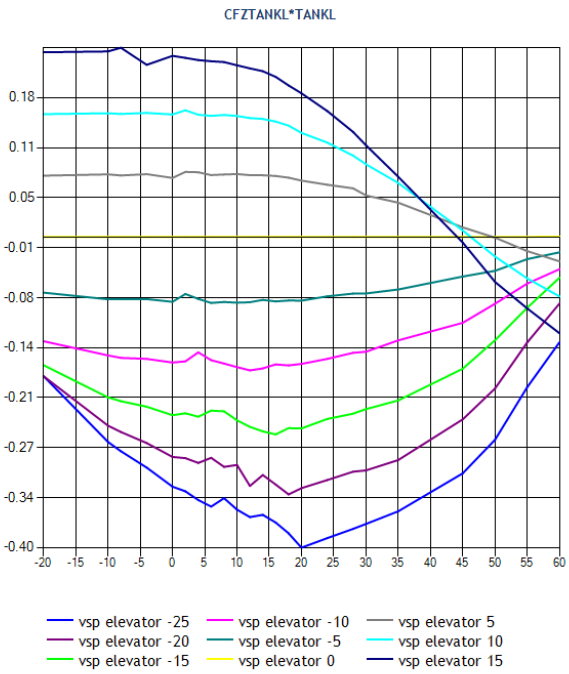
LIFT INCREMENT DUE TO CENTRE TANK

CFZTANKC(alpha,elevator)



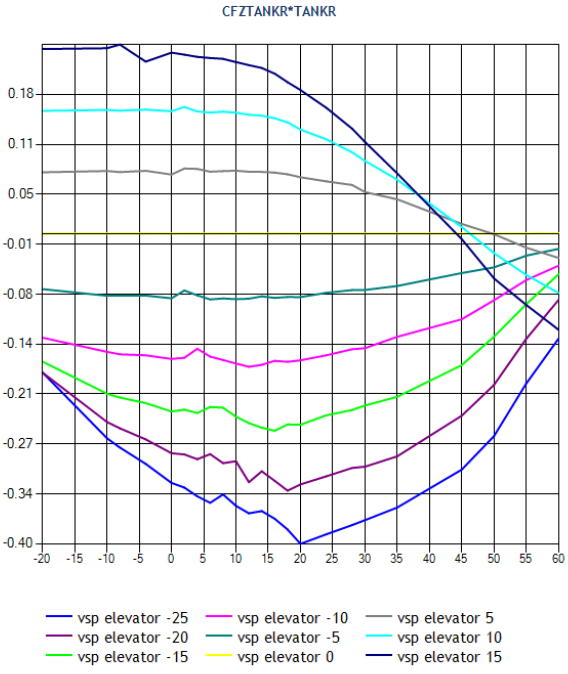
LIFT INCREMENT DUE TO LEFT WING TANK

CFZTANKL(alpha,elevator)



LIFT INCREMENT DUE TO RIGHT WING TANK

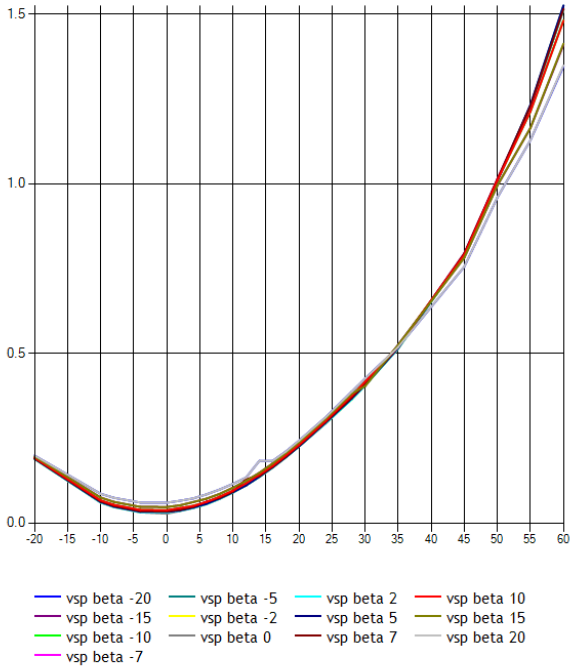
CFZTANKR(alpha,elevator)



DRAG

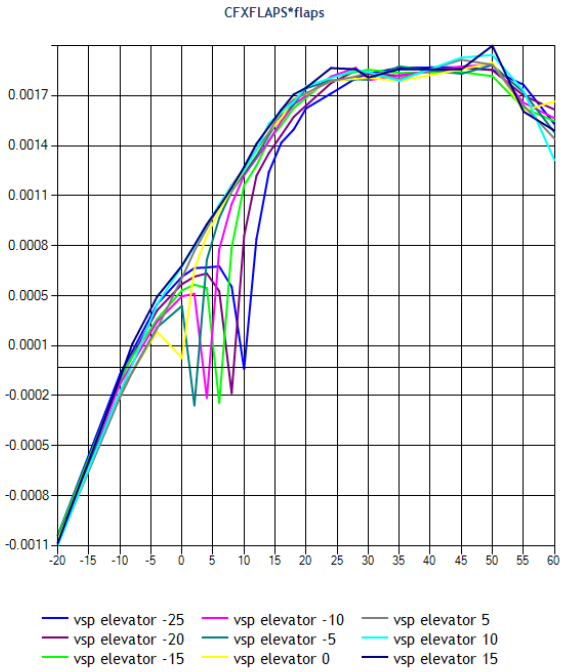
BASE DRAG

CFXB(alpha,beta)



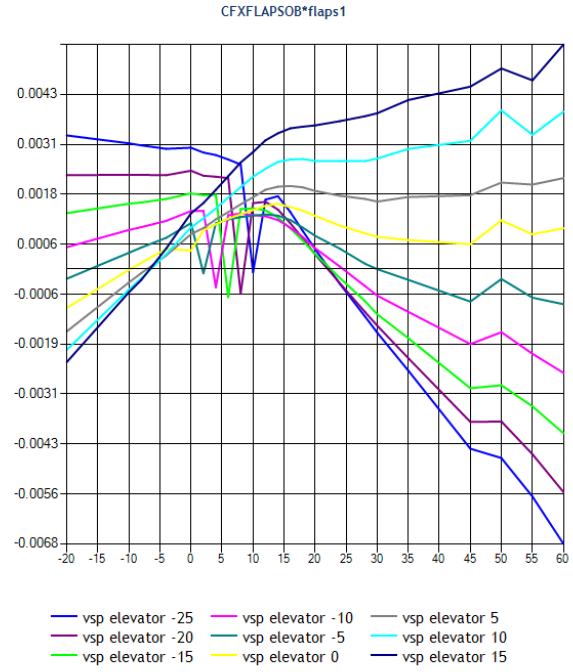
DRAG DUE TO FLAPS INBOARD

CFXFLAPS(alpha,elevator)



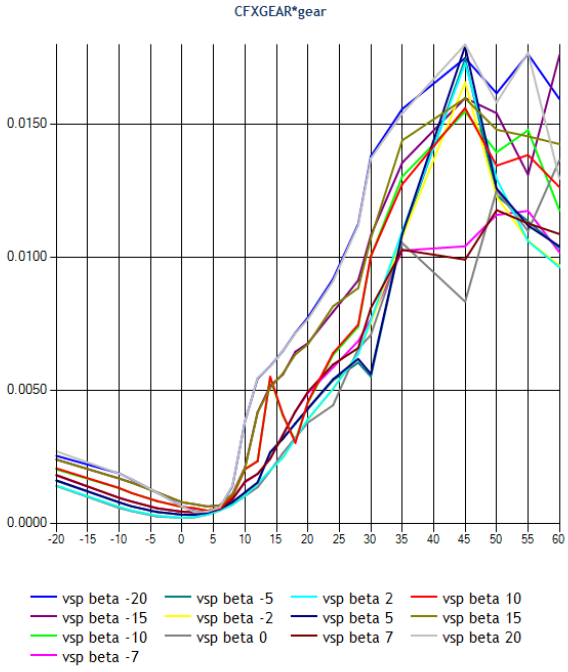
DRAG DUE TO FLAPS OUTBOARD

CFXFLAPSOB(alpha,elevator)



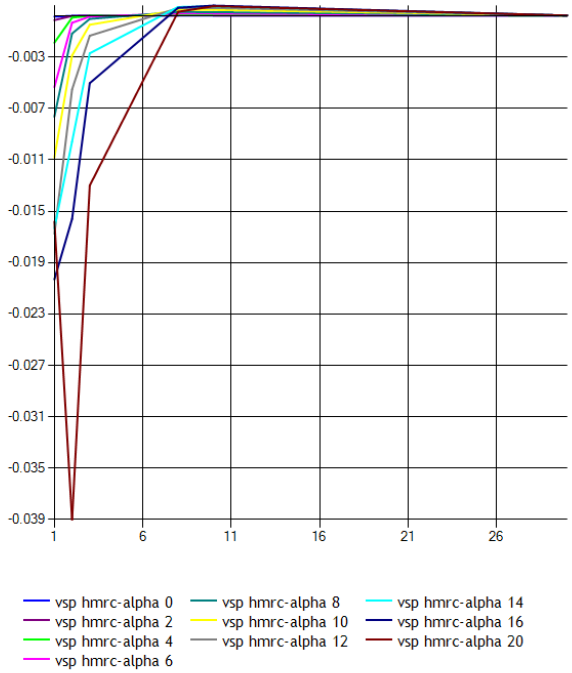
DRAG DUE TO GEAR

CFXGEAR(alpha,beta)



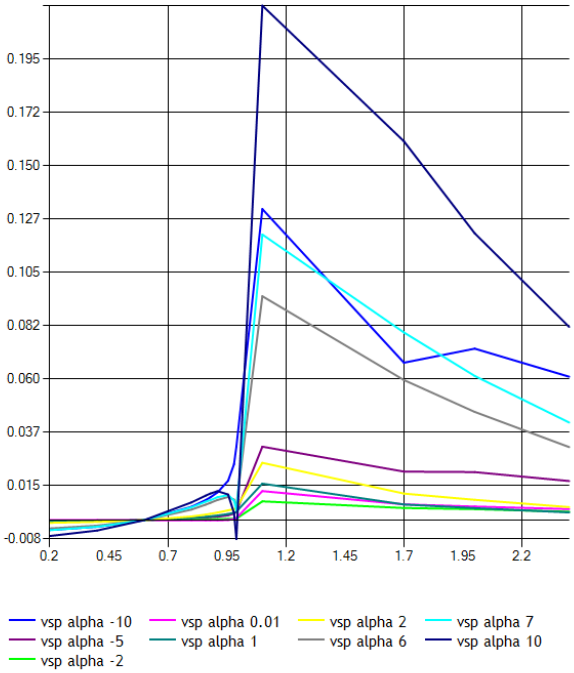
DRAG DUE TO GROUND EFFECT

CFXDGE(hmrc,hmrc-alpha)



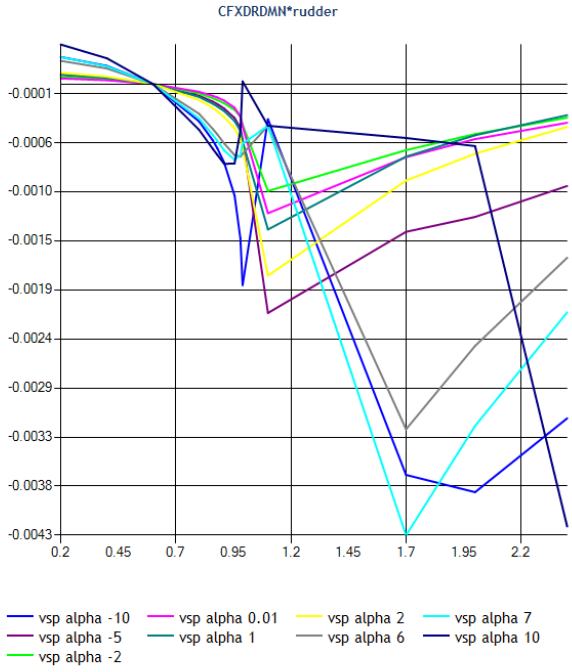
DRAG DUE TO MACH

CFXMN(mach,alpha)



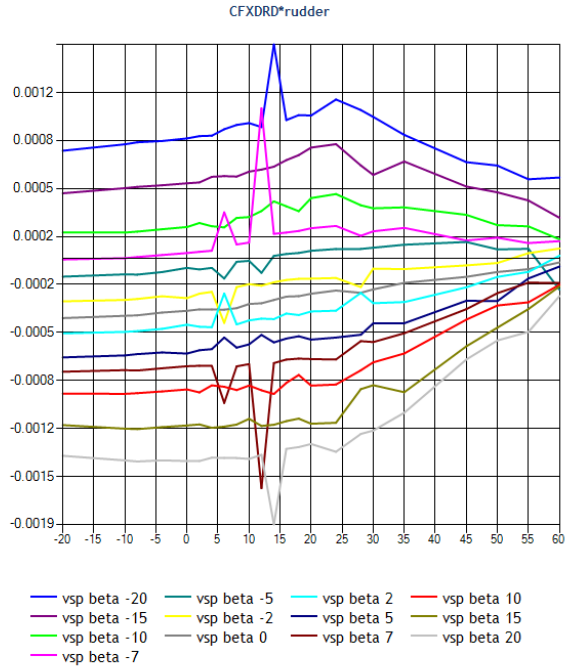
DRAG DUE TO MACH DUE TO RUDDER DEFLECTION

CFXDRDMN(mach,alpha)



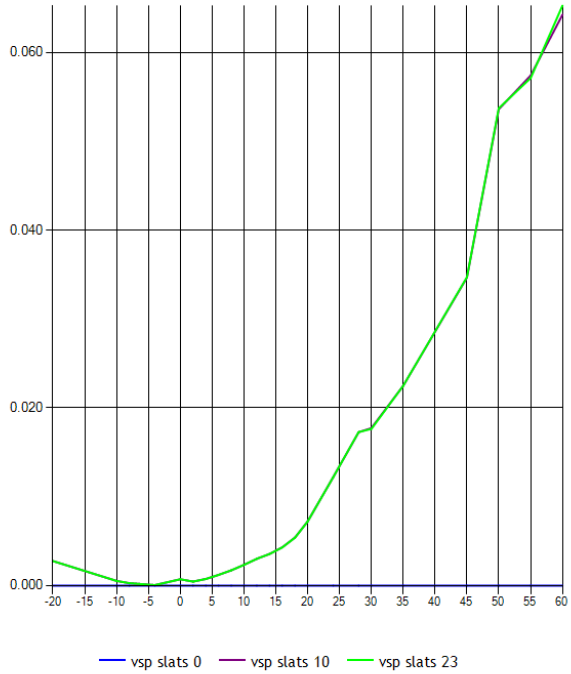
DRAG DUE TO RUDDER DEFLECTION

CFXDRD(alpha,beta)



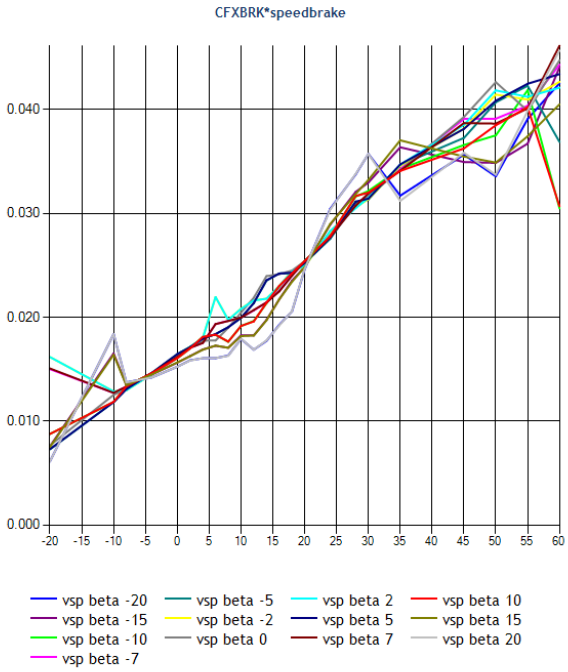
DRAG DUE TO SLATS

CFXDSL(alpha,slats)



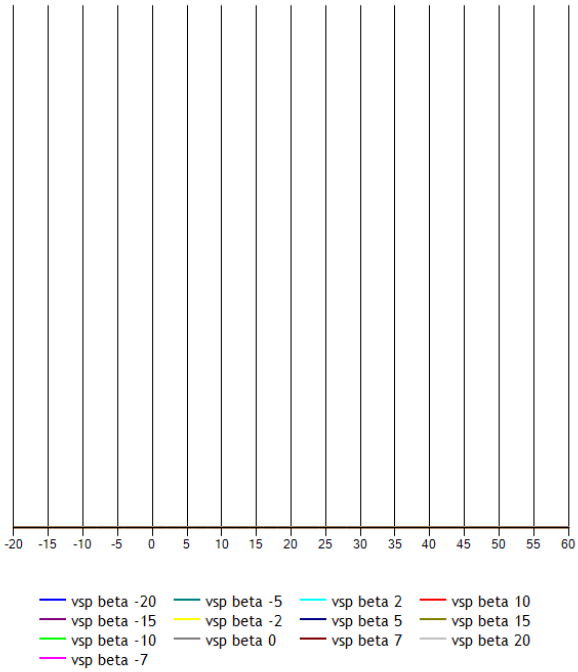
DRAG DUE TO SPEEDBRAKE

CFXBRK(alpha,beta)



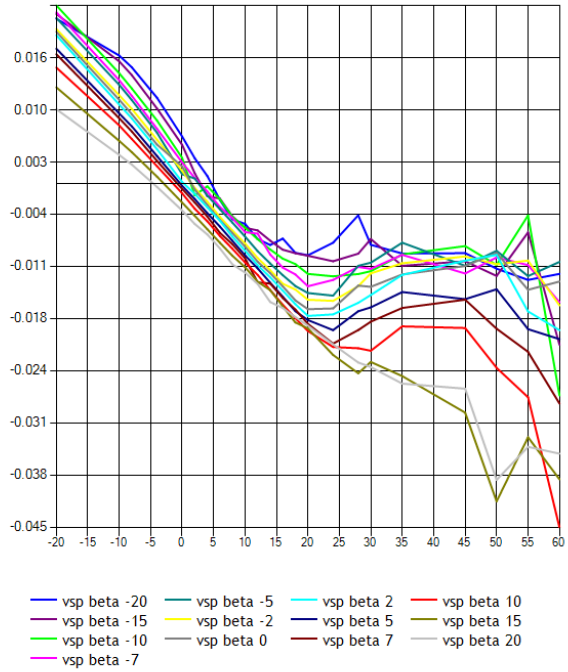
DRAG DUE TO SPOILERS LEFT

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



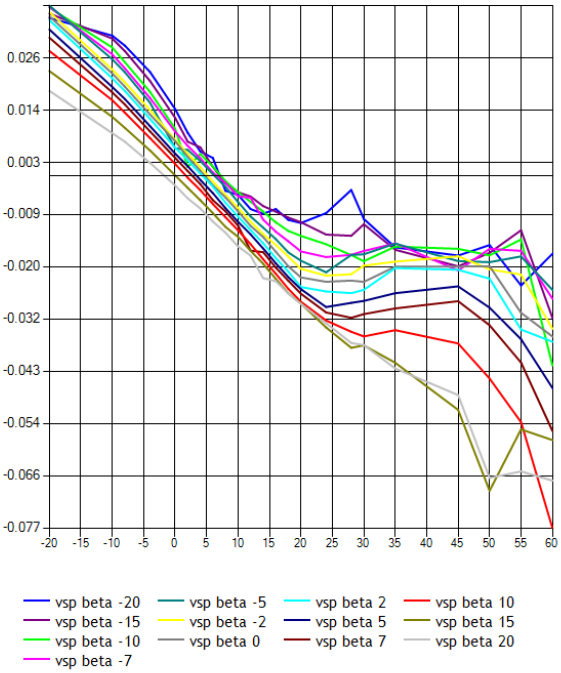
DRAG DUE TO SPOILERS LEFT

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



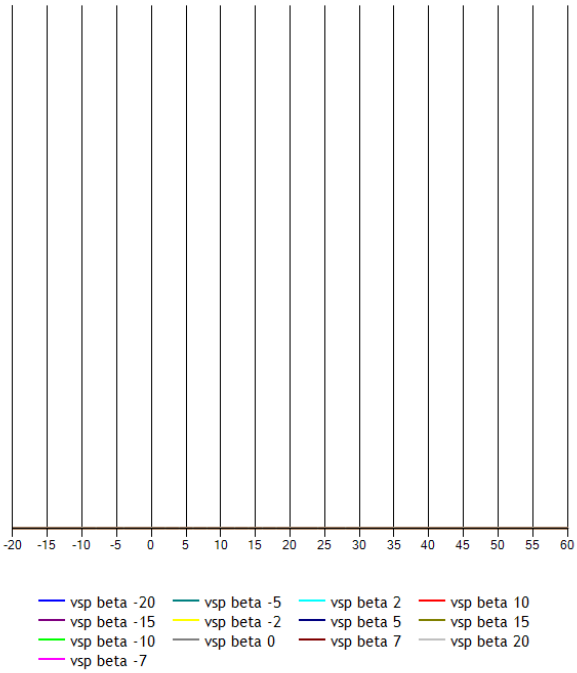
DRAG DUE TO SPOILERS LEFT

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



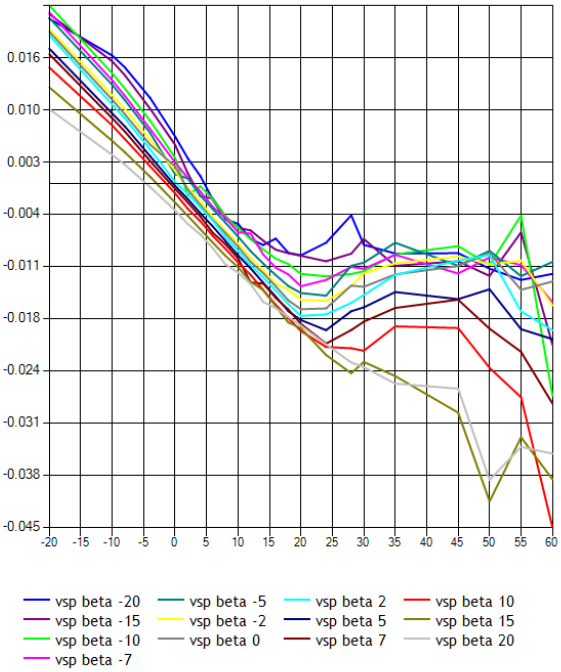
DRAG DUE TO SPOILERS RIGHT

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



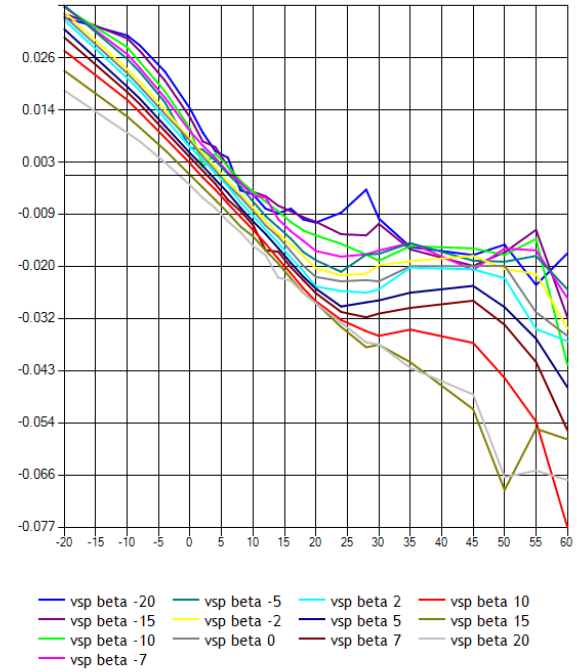
DRAG DUE TO SPOILERS RIGHT

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



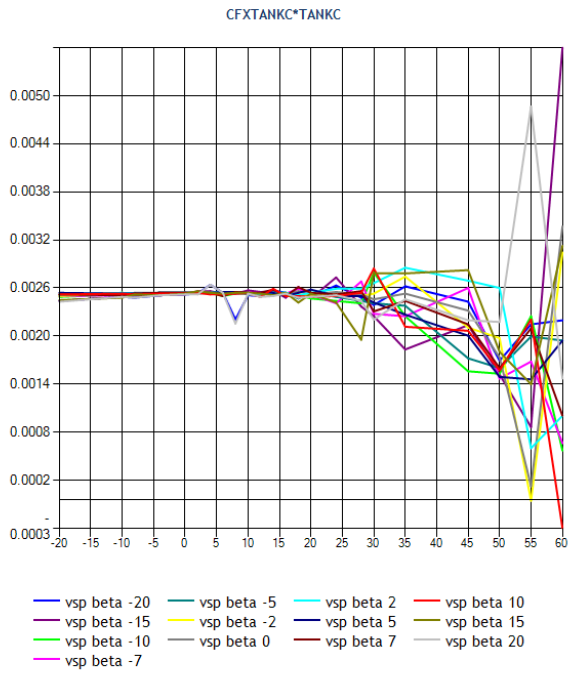
DRAG DUE TO SPOILERS RIGHT

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



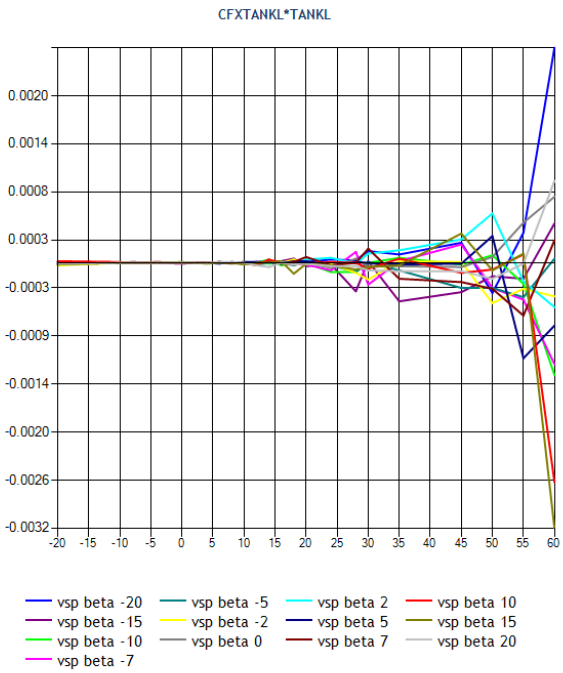
DRAG INCREMENT DUE TO CENTRE TANK

CFXTANKC(alpha,beta)



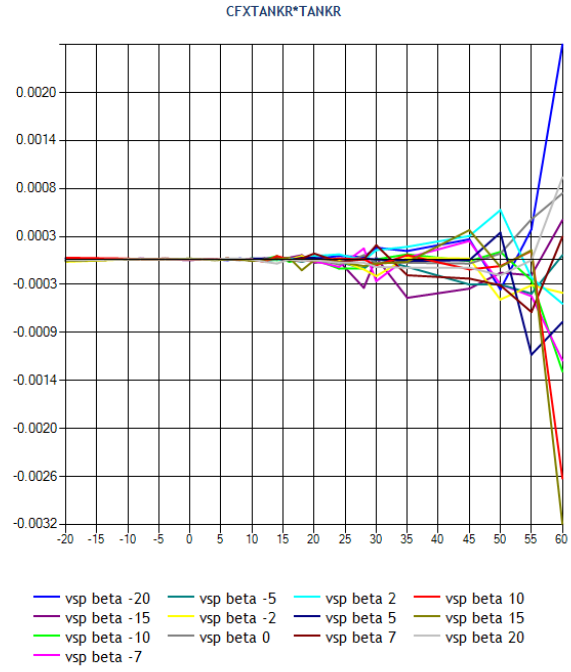
DRAG INCREMENT DUE TO LEFT WING TANK

CFXTANKL(alpha,beta)



DRAG INCREMENT DUE TO RIGHT WING TANK

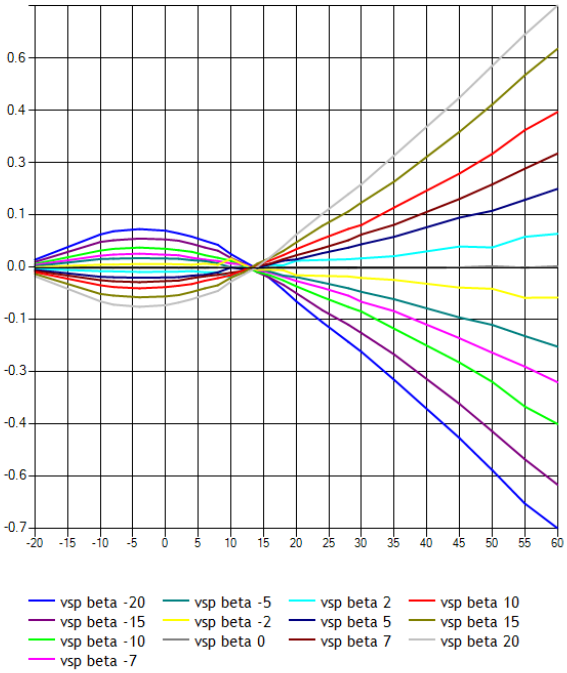
CFXTANKR(alpha,beta)



SIDE

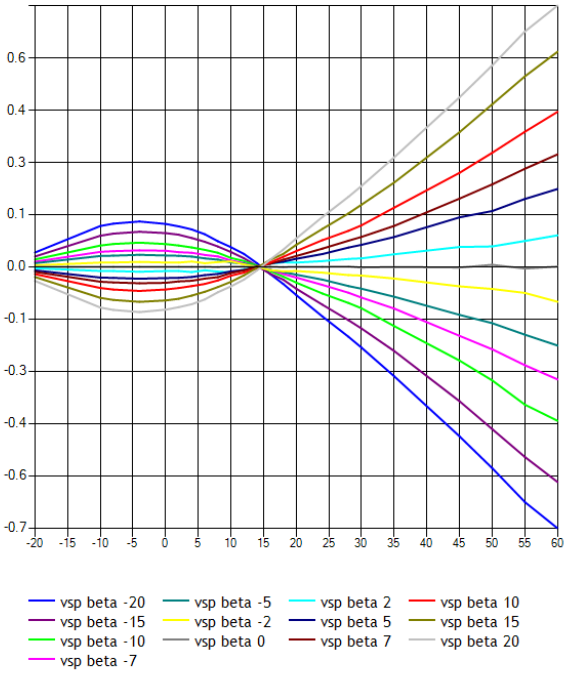
BASE SIDEFORCE

CFYB (alpha,beta,elevator=-25)



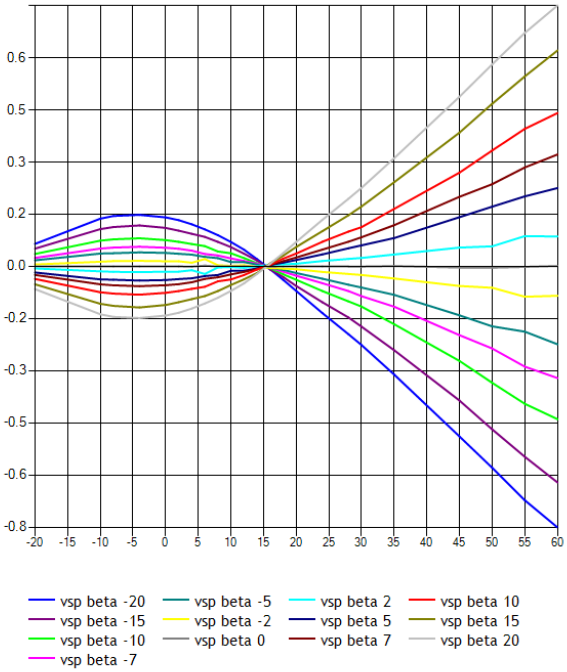
BASE SIDEFORCE

CFYB (alpha,beta,elevator=-20)



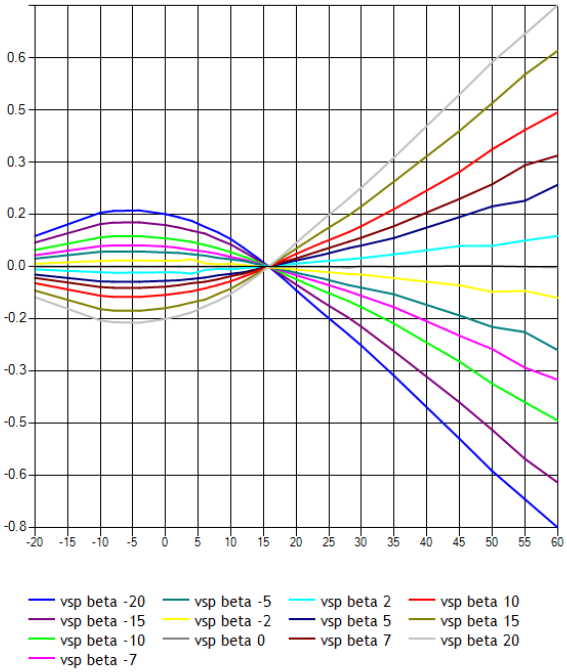
BASE SIDEFORCE

CFYB (alpha,beta,elevator=-15)



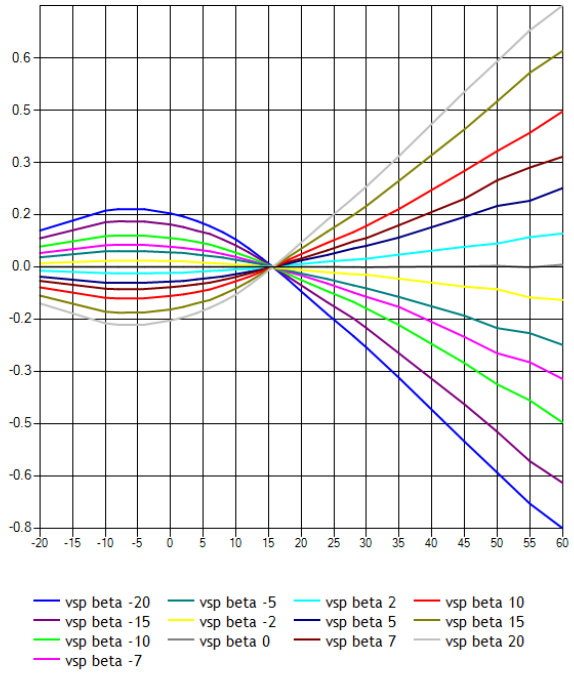
BASE SIDEFORCE

CFYB (alpha,beta,elevator=-10)



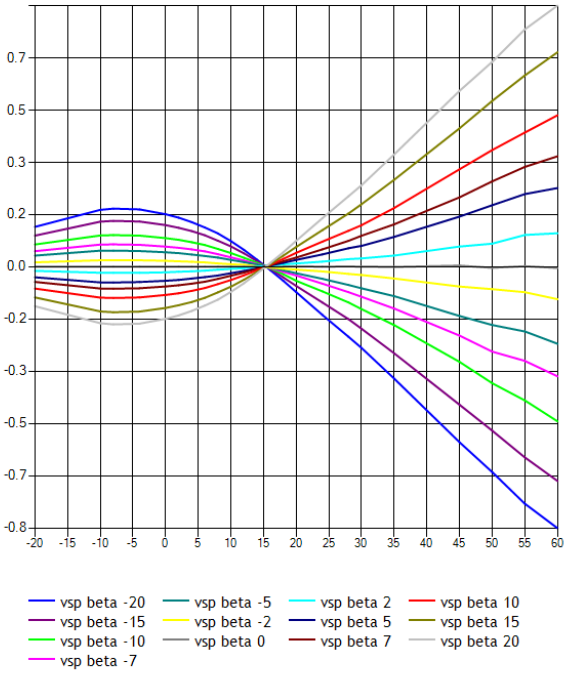
BASE SIDEFORCE

CFYB (alpha,beta,elevator=-5)



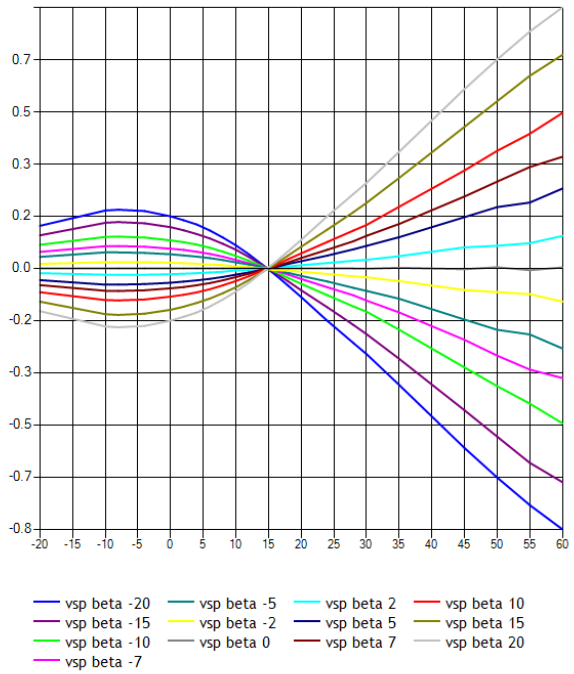
BASE SIDEFORCE

CFYB (alpha,beta,elevator=0)



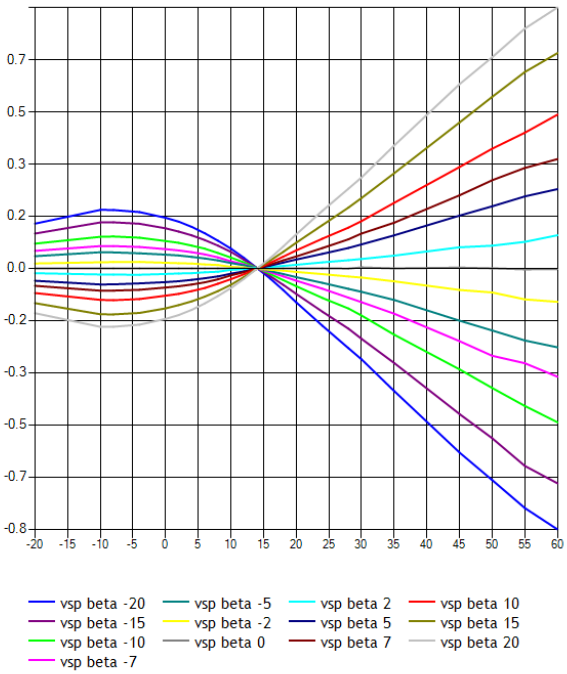
BASE SIDEFORCE

CFYB (alpha,beta,elevator=5)



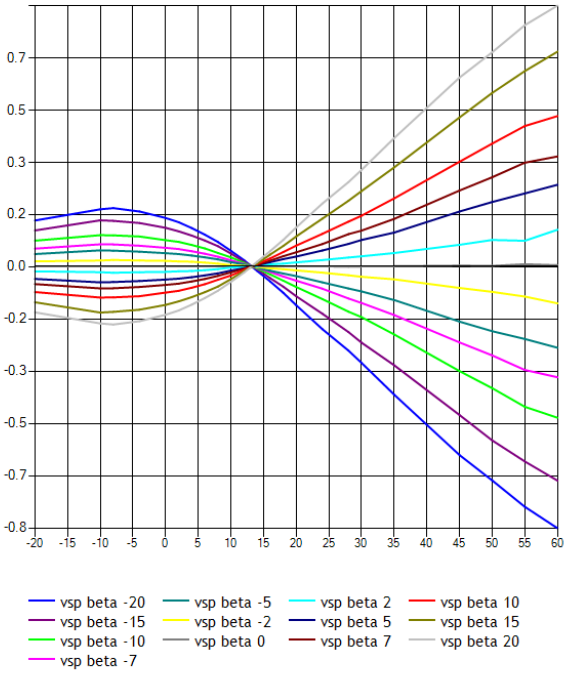
BASE SIDEFORCE

CFYB (alpha,beta,elevator=10)



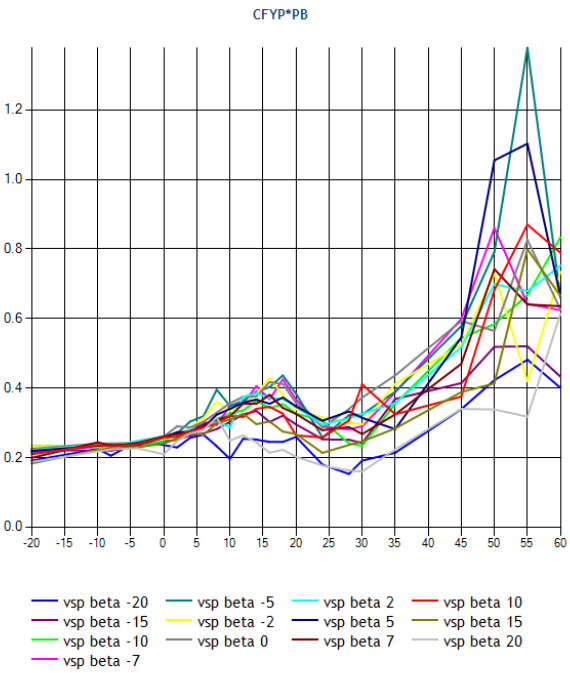
BASE SIDEFORCE

CFYB (alpha,beta,elevator=15)



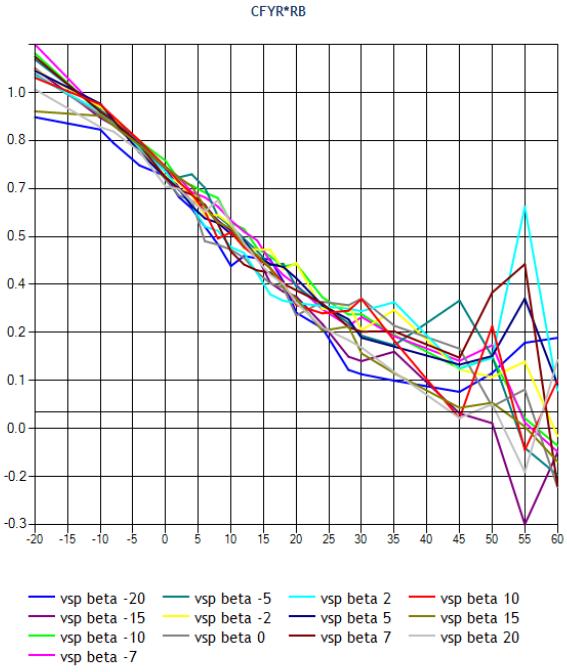
SIDE FORCE DERIVATIVE MOMENT DUE TO ROLL RATE

CFYP(alpha,beta)



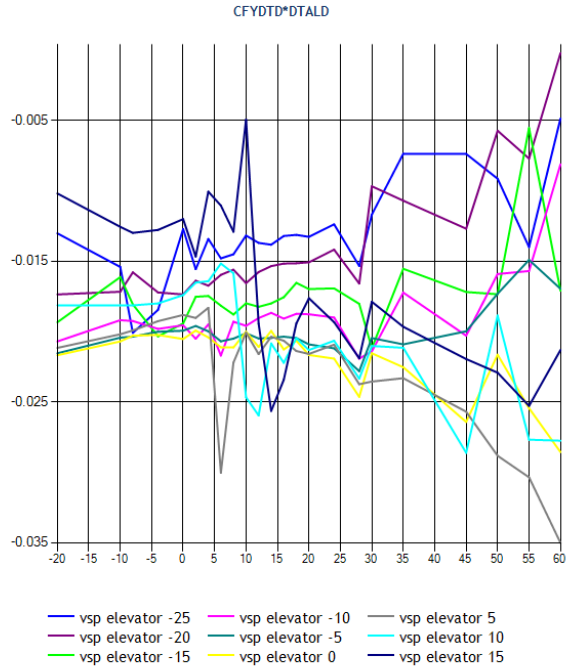
SIDE FORCE DERIVATIVE MOMENT DUE TO YAW RATE

CFYR(alpha,beta)



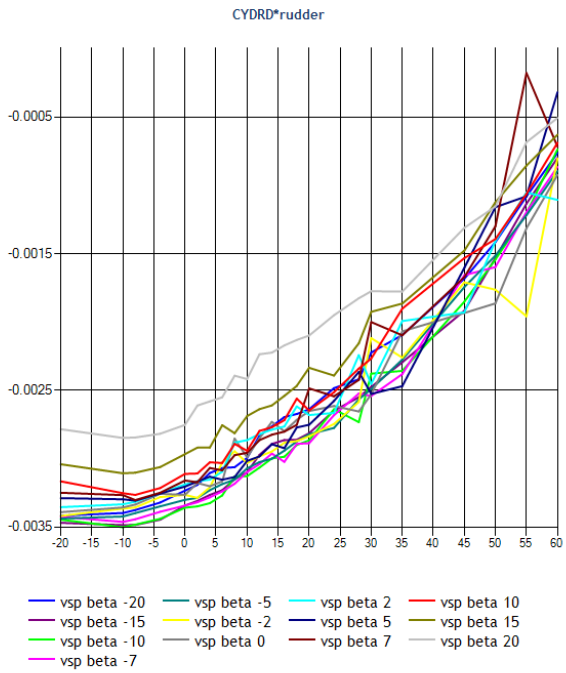
SIDE FORCE DUE TO DIFFERENTIAL TAIL DEFLECTION

CFYDTD(alpha,elevator)



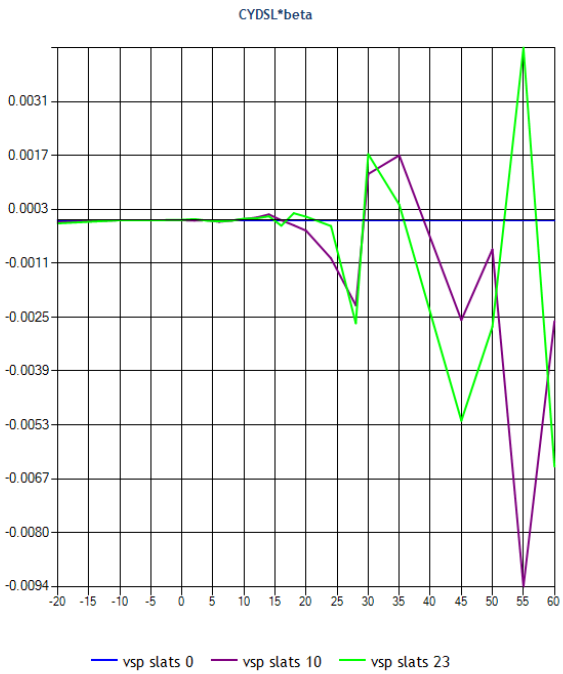
SIDE FORCE DUE TO RUDDER DEFLECTION

CYDRD(alpha,beta)



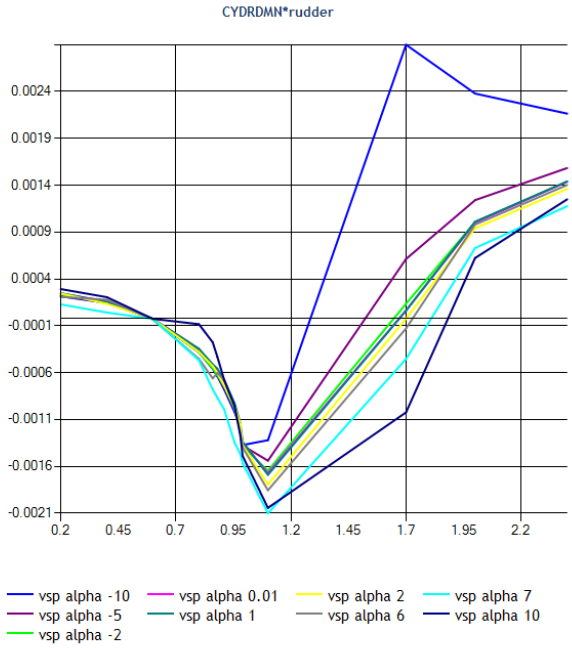
SIDE FORCE DUE TO SLATS

CYDSL(alpha,slats)



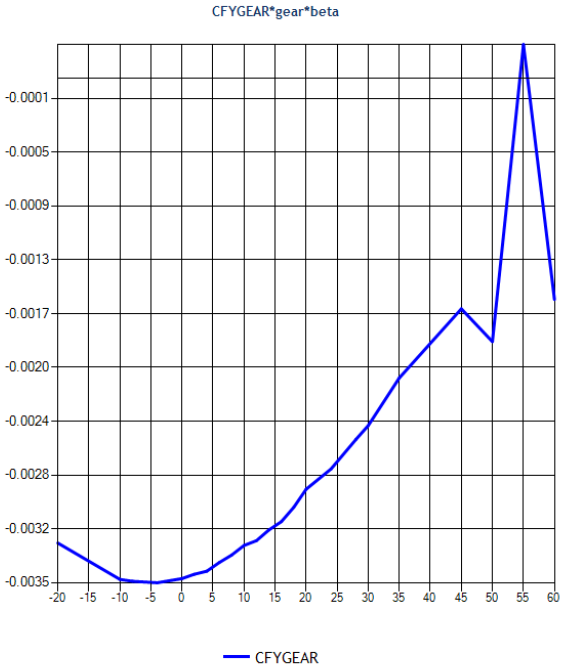
SIDEFORCE CHANGE DUE TO MACH DUE TO TO RUDDER DEFLECTION

CYDRDMN(mach,alpha)



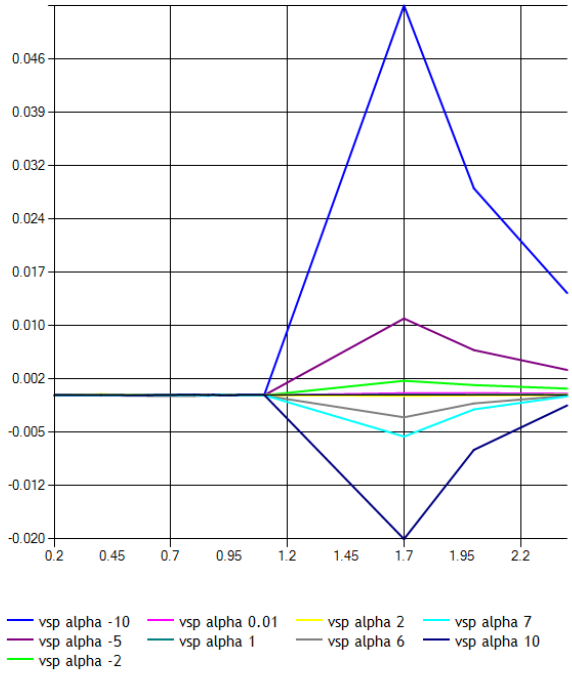
SIDEFORCE DUE TO GEAR

CFYGEAR(alpha)



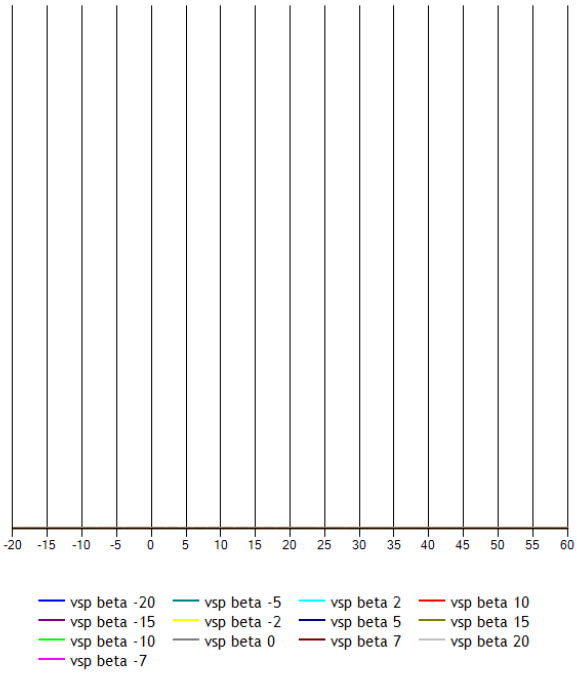
SIDEFORCE DUE TO MACH

CFYMN(mach,alpha)



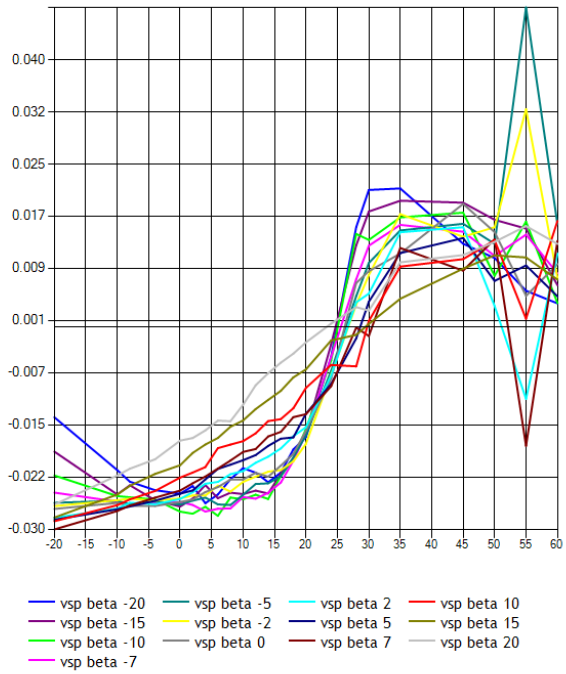
SIDEFORCE DUE TO SPOILERS LEFT

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



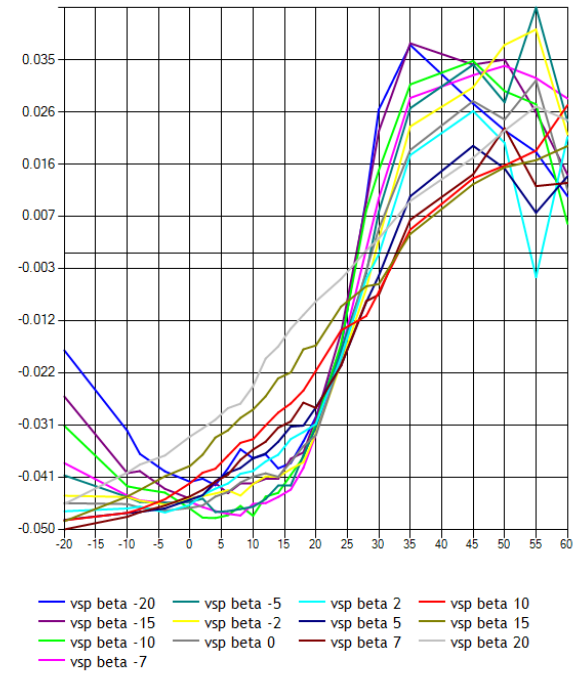
SIDEFORCE DUE TO SPOILERS LEFT

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



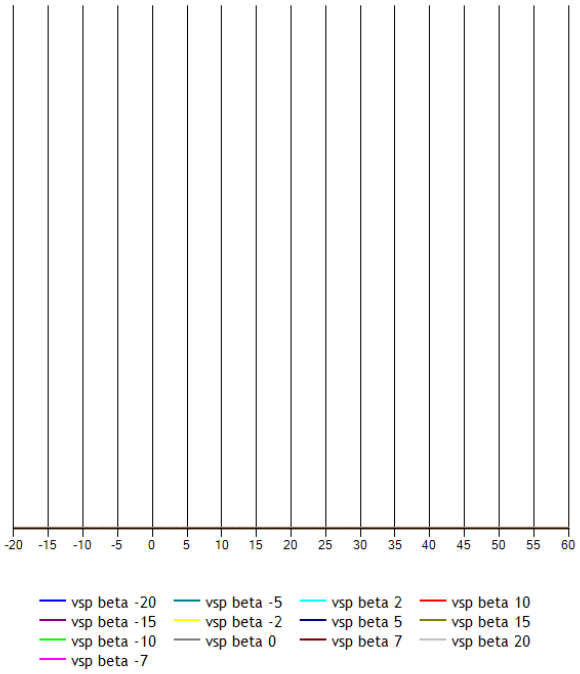
SIDEFORCE DUE TO SPOILERS LEFT

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



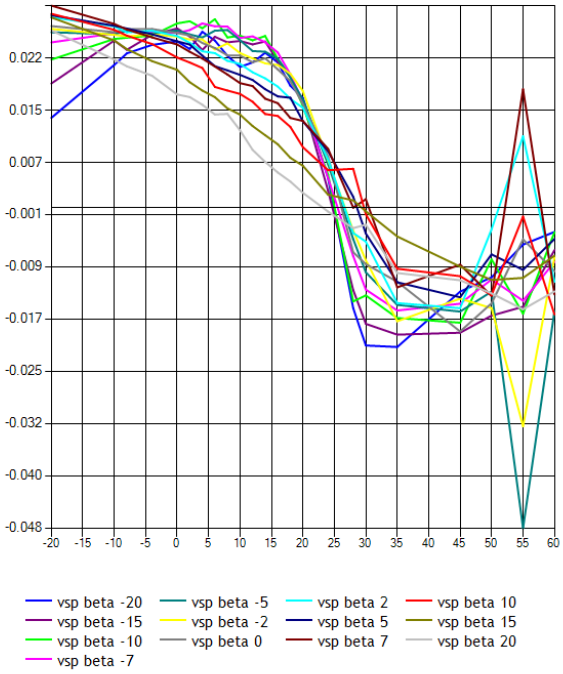
SIDEFORCE DUE TO SPOILERS RIGHT

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



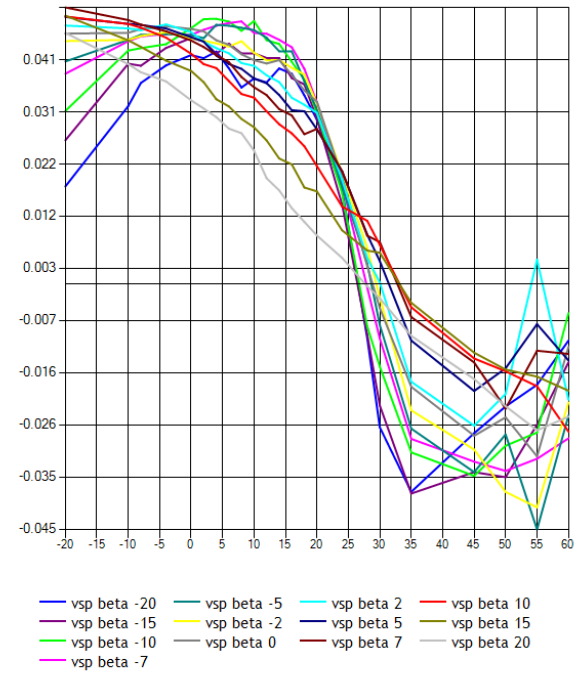
SIDEFORCE DUE TO SPOILERS RIGHT

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



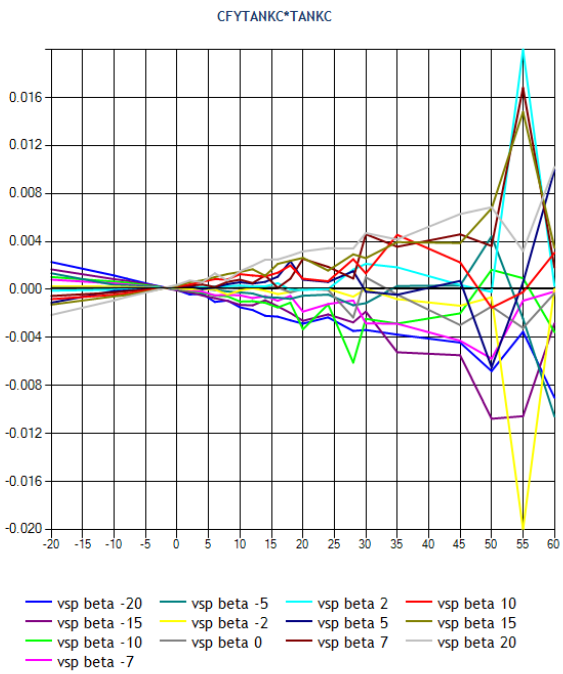
SIDEFORCE DUE TO SPOILERS RIGHT

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



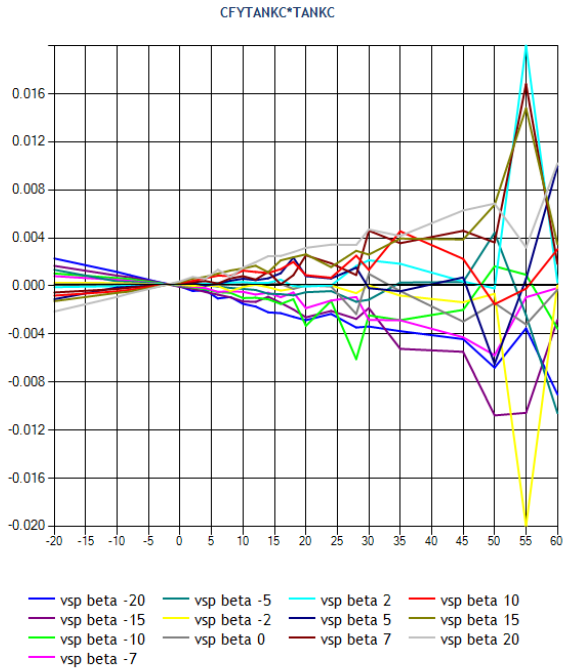
SIDEFORCE INCREMENT DUE TO CENTRE TANK

CFYTANKC (alpha,beta,elevator=-25)



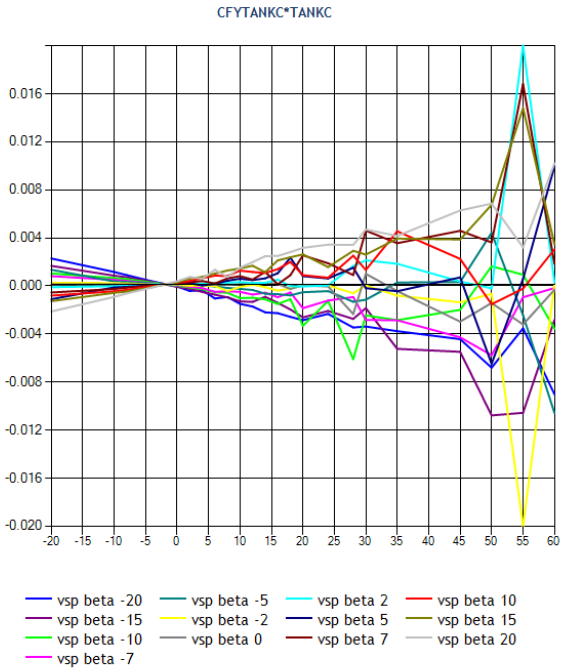
SIDEFORCE INCREMENT DUE TO CENTRE TANK

CFYTANKC (alpha,beta,elevator=-20)



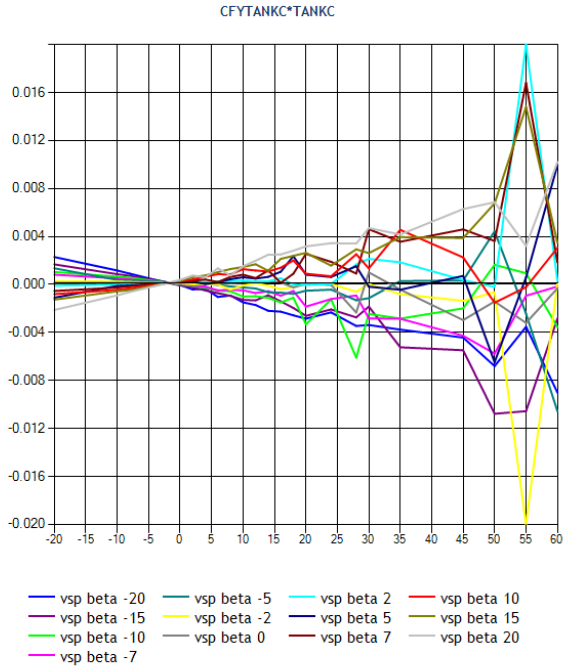
SIDEFORCE INCREMENT DUE TO CENTRE TANK

CFYTANKC (alpha,beta,elevator=-15)



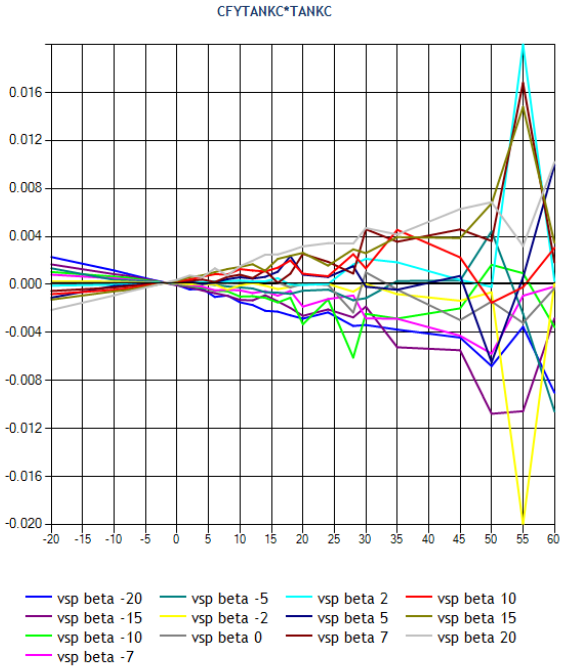
SIDEFORCE INCREMENT DUE TO CENTRE TANK

CFYTANKC (alpha,beta,elevator=-10)



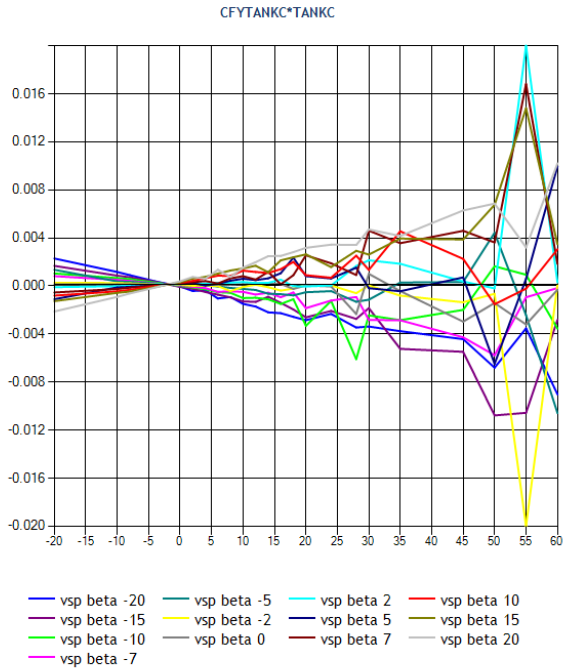
SIDEFORCE INCREMENT DUE TO CENTRE TANK

CFYTANKC (alpha,beta,elevator=-5)



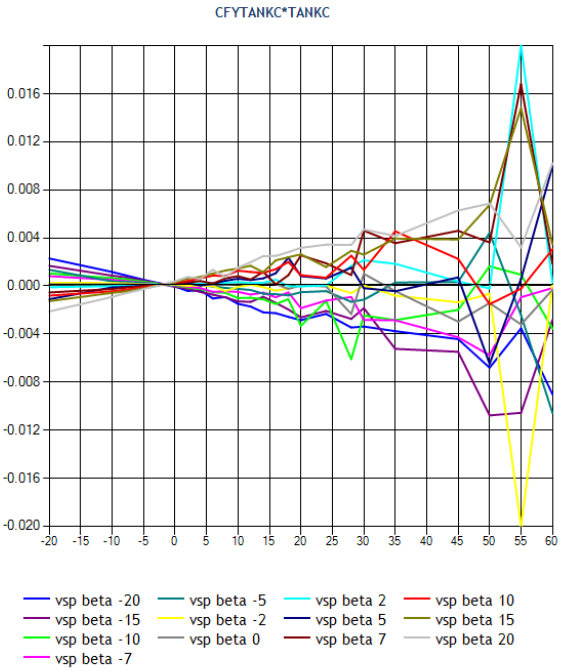
SIDEFORCE INCREMENT DUE TO CENTRE TANK

CFYTANKC (alpha,beta,elevator=0)



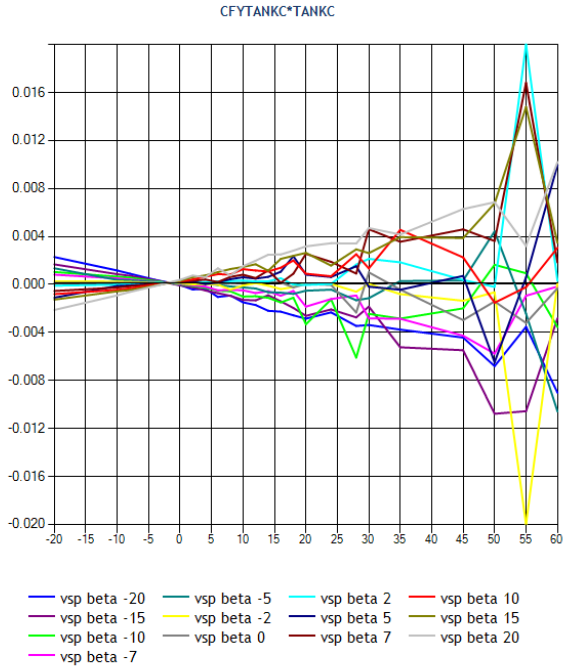
SIDEFORCE INCREMENT DUE TO CENTRE TANK

CFYTANKC (alpha,beta,elevator=5)



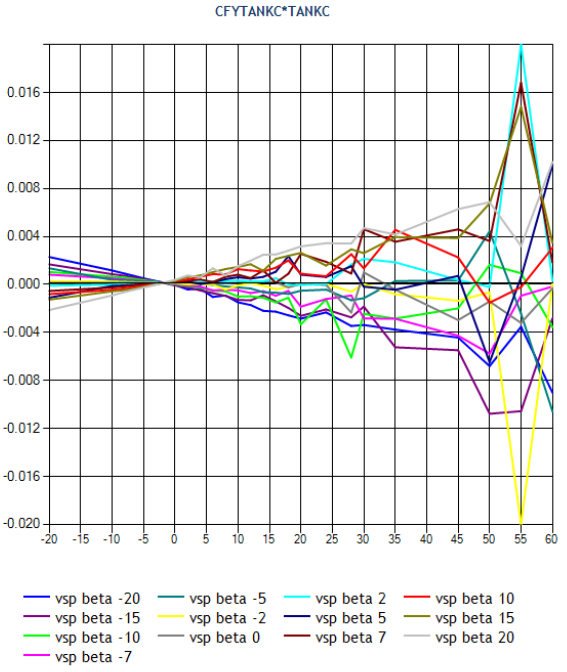
SIDEFORCE INCREMENT DUE TO CENTRE TANK

CFYTANKC (alpha,beta,elevator=10)



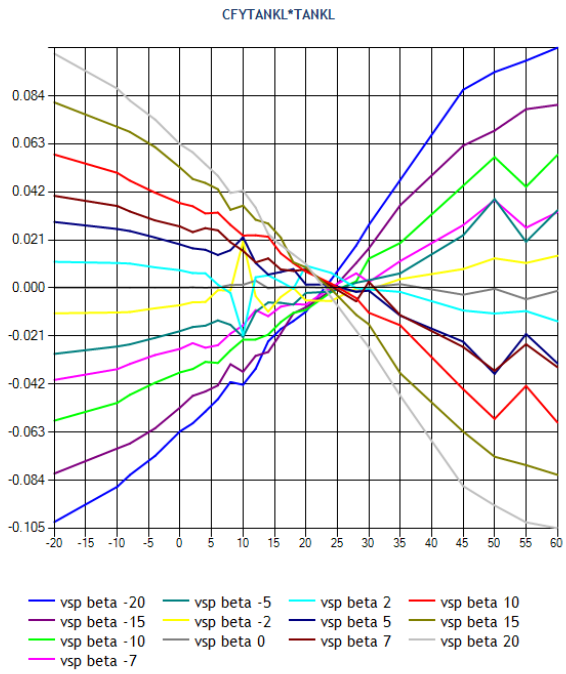
SIDEFORCE INCREMENT DUE TO CENTRE TANK

CFYTANKC (alpha,beta,elevator=15)



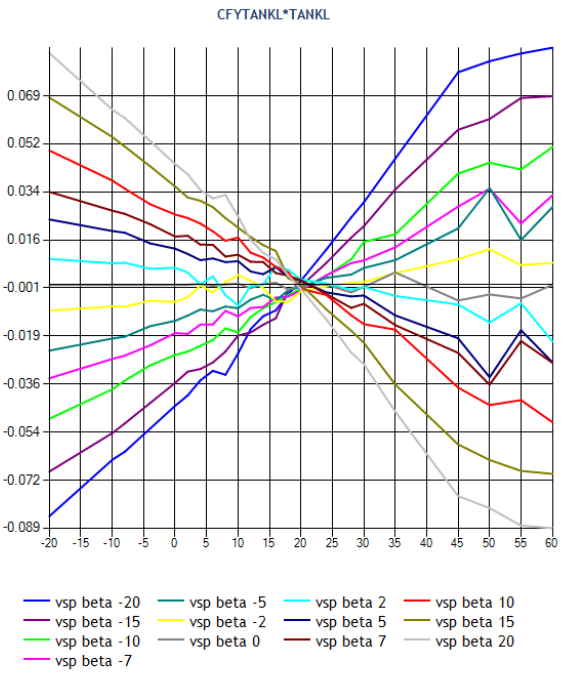
SIDEFORCE INCREMENT DUE TO LEFT WING TANK

CFYTANKL (alpha,beta,elevator=-25)



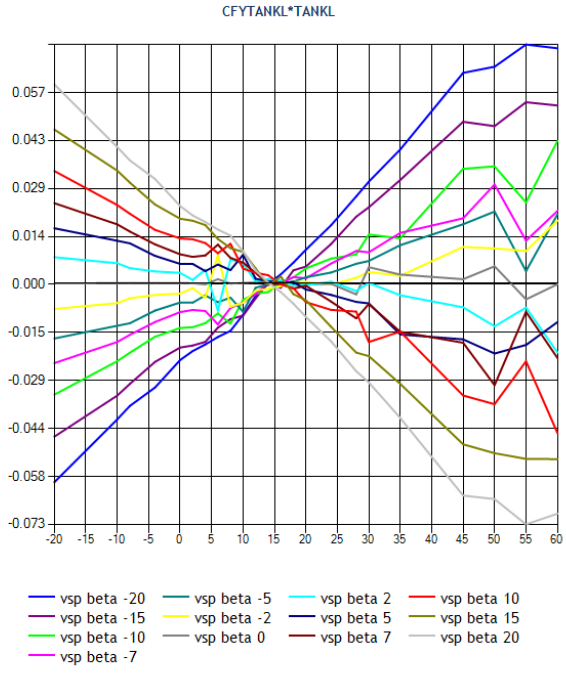
SIDEFORCE INCREMENT DUE TO LEFT WING TANK

CFYTANKL (alpha,beta,elevator=-20)



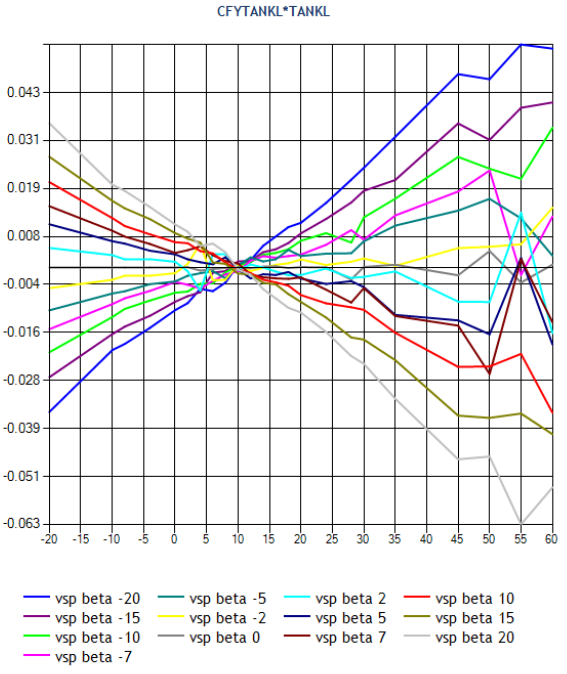
SIDEFORCE INCREMENT DUE TO LEFT WING TANK

CFYTANKL (alpha,beta,elevator=-15)



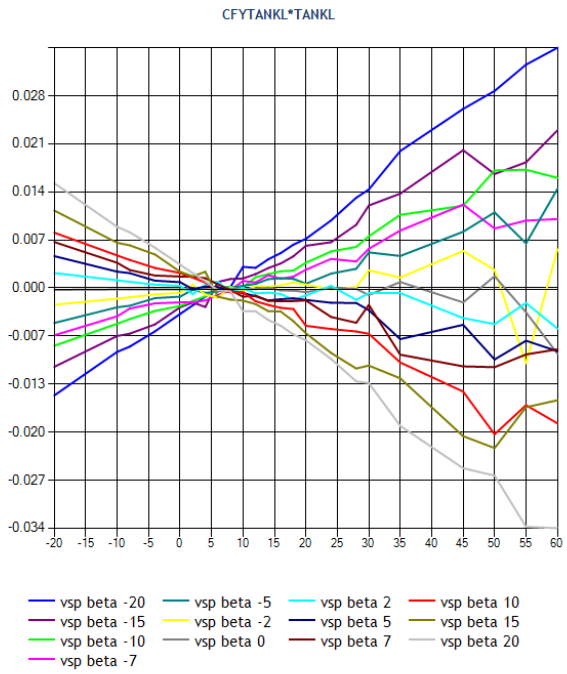
SIDEFORCE INCREMENT DUE TO LEFT WING TANK

CFYTANKL (alpha,beta,elevator=-10)



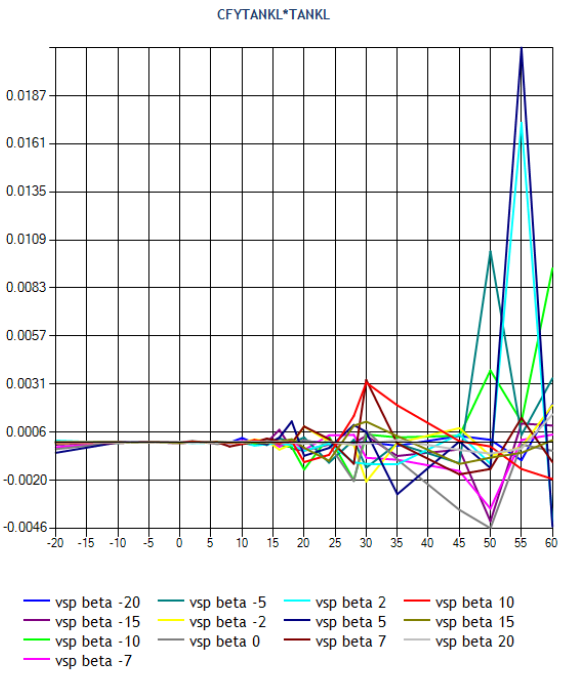
SIDEFORCE INCREMENT DUE TO LEFT WING TANK

CFYTANKL (alpha,beta,elevator=-5)



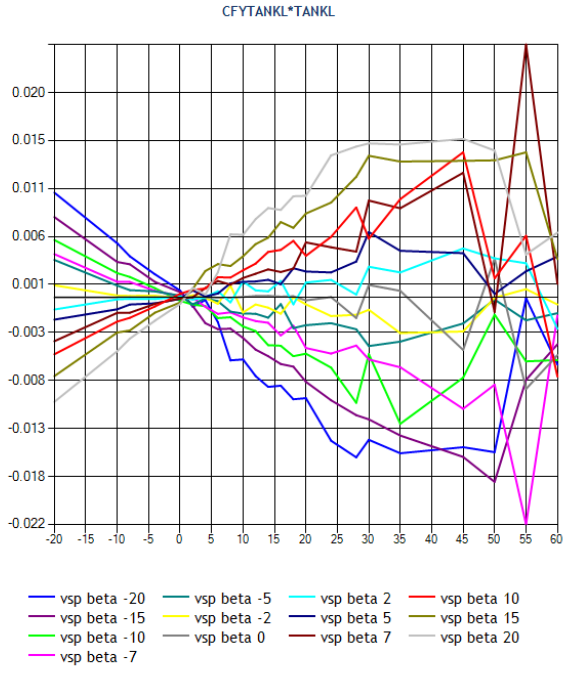
SIDEFORCE INCREMENT DUE TO LEFT WING TANK

CFYTANKL (alpha,beta,elevator=0)



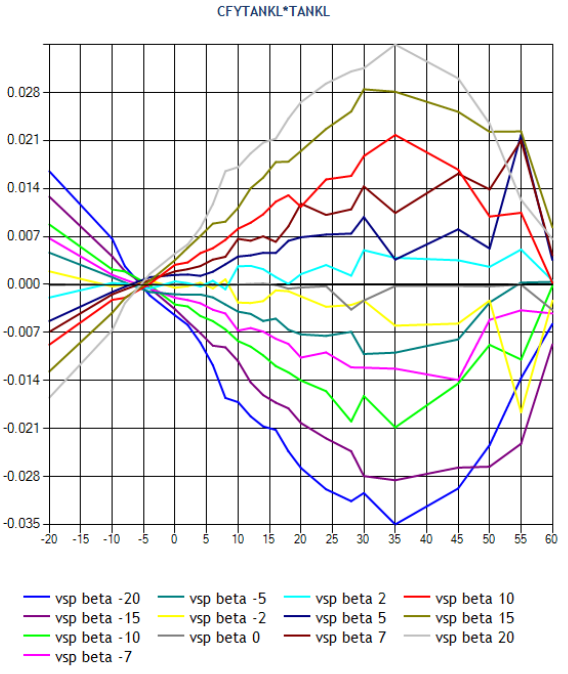
SIDEFORCE INCREMENT DUE TO LEFT WING TANK

CFYTANKL (alpha,beta,elevator=5)



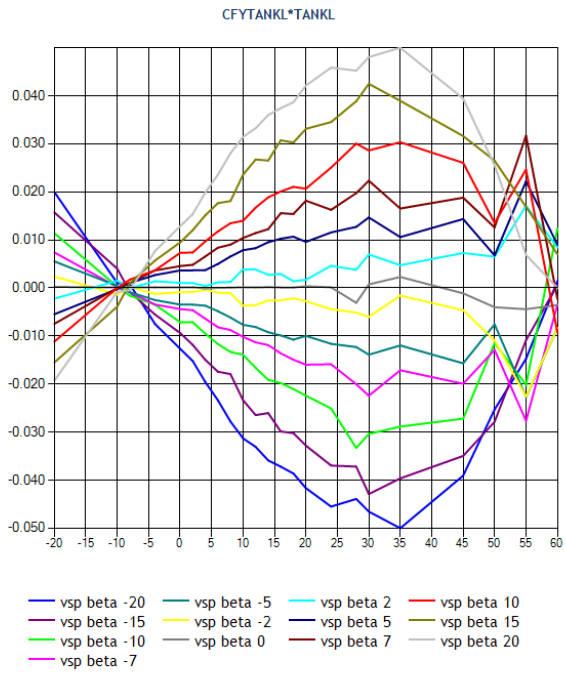
SIDEFORCE INCREMENT DUE TO LEFT WING TANK

CFYTANKL (alpha,beta,elevator=10)



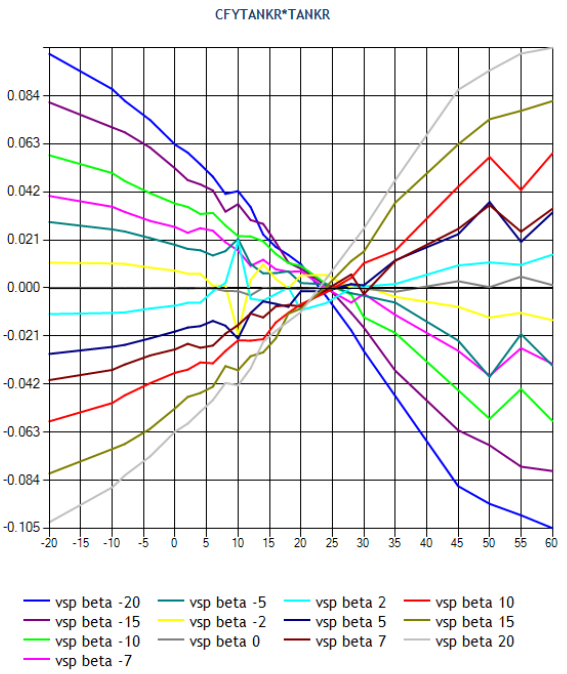
SIDEFORCE INCREMENT DUE TO LEFT WING TANK

CFYTANKL (alpha,beta,elevator=15)



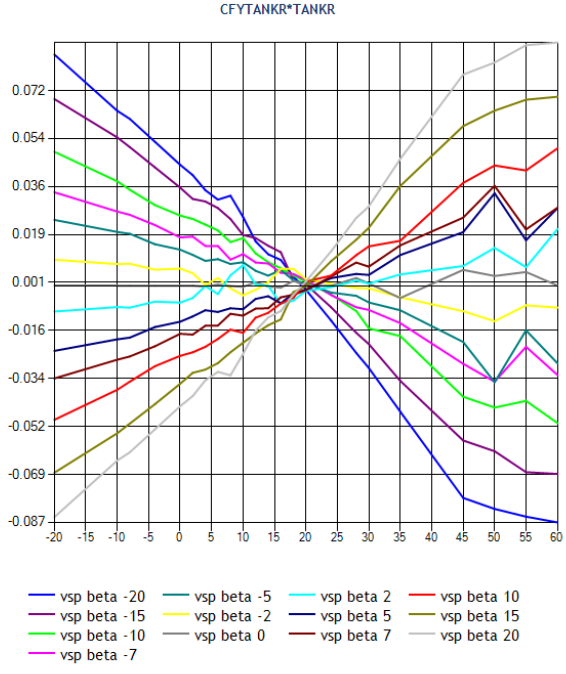
SIDEFORCE INCREMENT DUE TO RIGHT WING TANK

CFYTANKR (alpha,beta,elevator=-25)



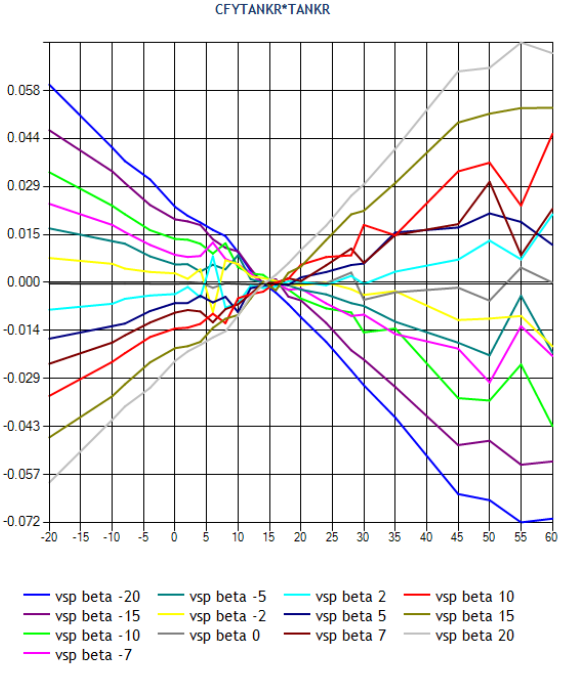
SIDEFORCE INCREMENT DUE TO RIGHT WING TANK

CFYTANKR (alpha,beta,elevator=-20)



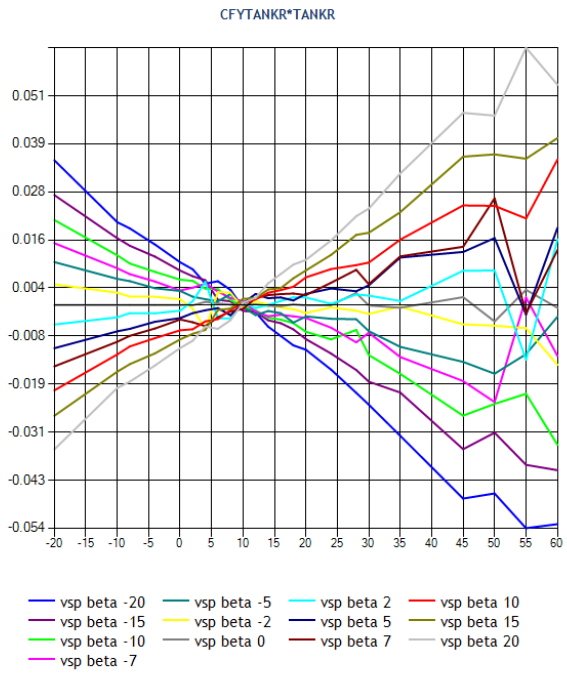
SIDEFORCE INCREMENT DUE TO RIGHT WING TANK

CFYTANKR (alpha,beta,elevator=-15)



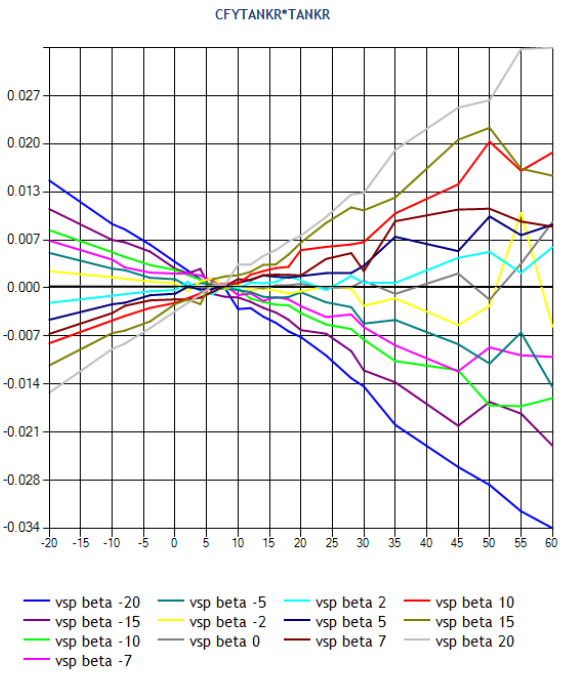
SIDEFORCE INCREMENT DUE TO RIGHT WING TANK

CFYTANKR (alpha,beta,elevator=-10)



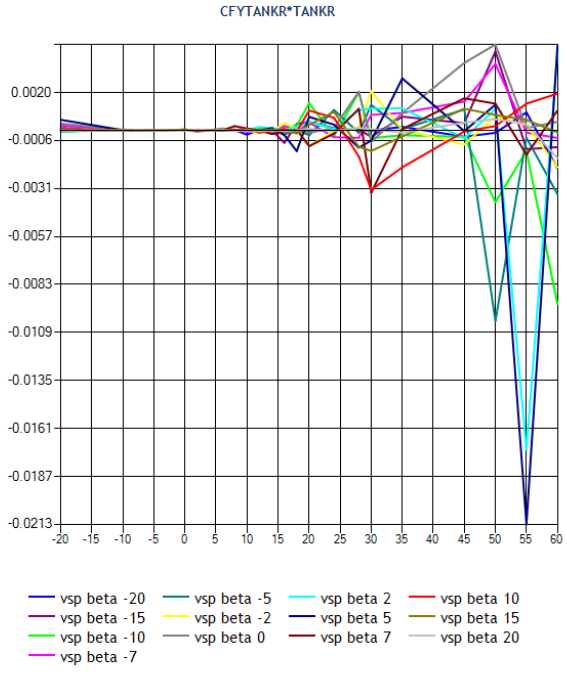
SIDEFORCE INCREMENT DUE TO RIGHT WING TANK

CFYTANKR (alpha,beta,elevator=-5)



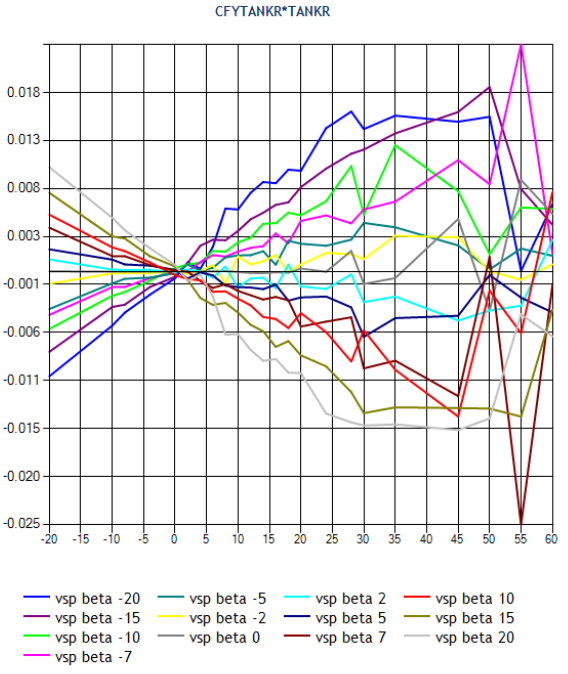
SIDEFORCE INCREMENT DUE TO RIGHT WING TANK

CFYTANKR (alpha,beta,elevator=0)



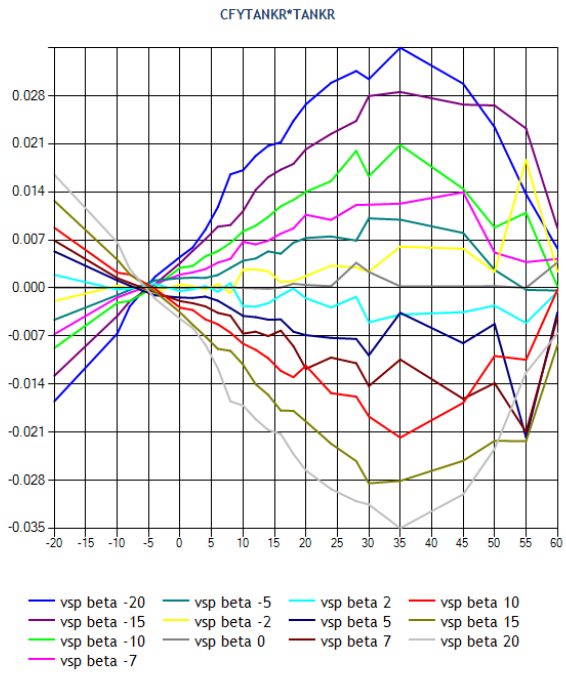
SIDEFORCE INCREMENT DUE TO RIGHT WING TANK

CFYTANKR (alpha,beta,elevator=5)



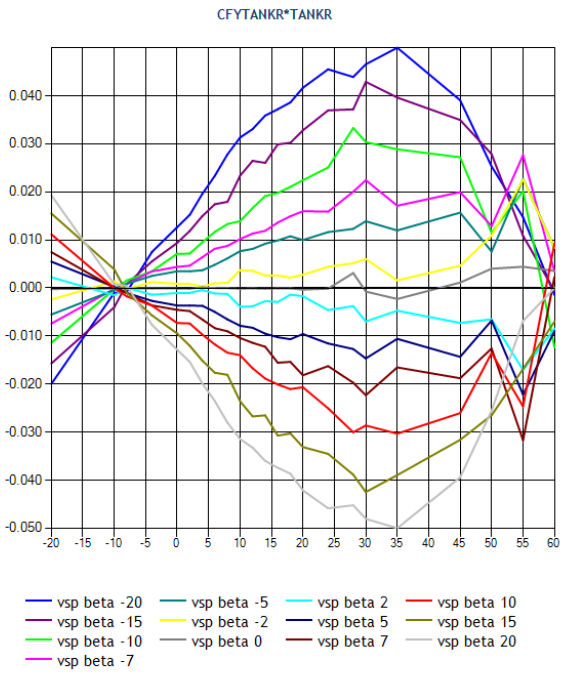
SIDEFORCE INCREMENT DUE TO RIGHT WING TANK

CFYTANKR (alpha,beta,elevator=10)



SIDEFORCE INCREMENT DUE TO RIGHT WING TANK

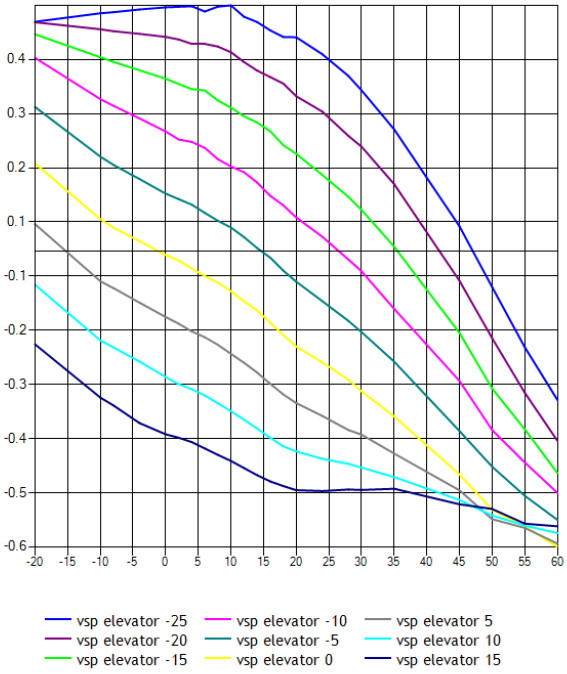
CFYTANKR (alpha,beta,elevator=15)



PITCH

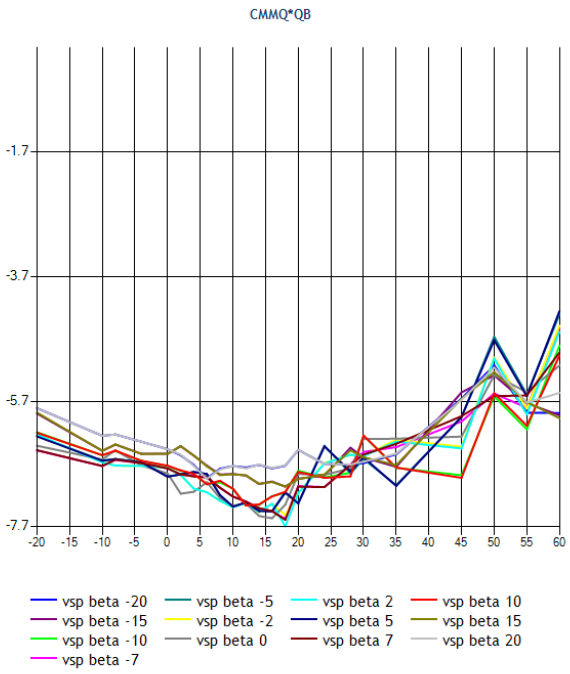
BASE PITCHING MOMENT

CMM1(alpha,elevator)



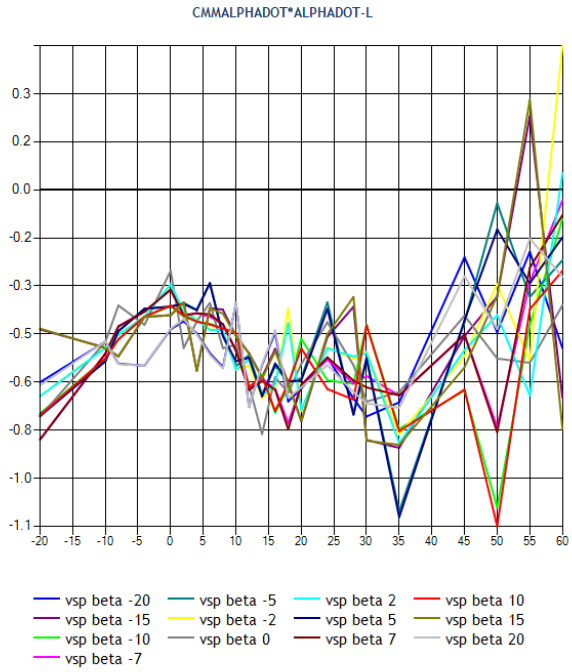
PITCH DAMPING DERIVATIVE

CMMQ(alpha,beta)



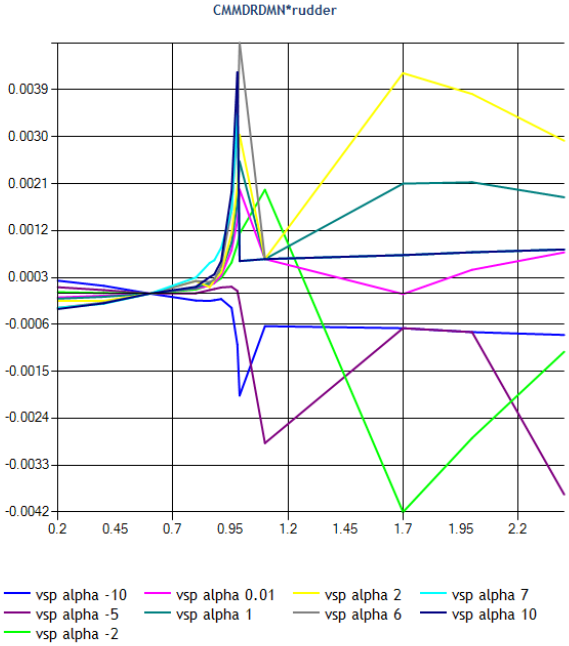
PITCH DERIVATIVE MOMENT DUE TO ALPHA DOT

CMMALPHADOT(alpha,beta)



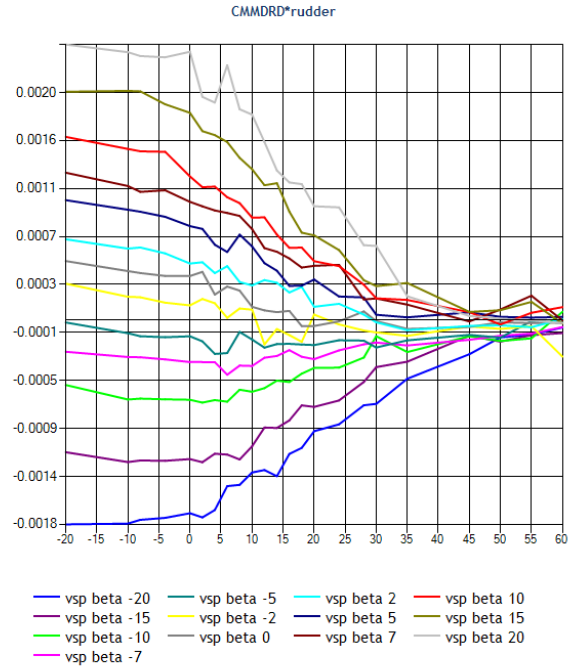
PITCH MOMENT CHANGE DUE TO MACH DUE TO RUDDER DEFLECTION

CMMDRDMN(mach,alpha)



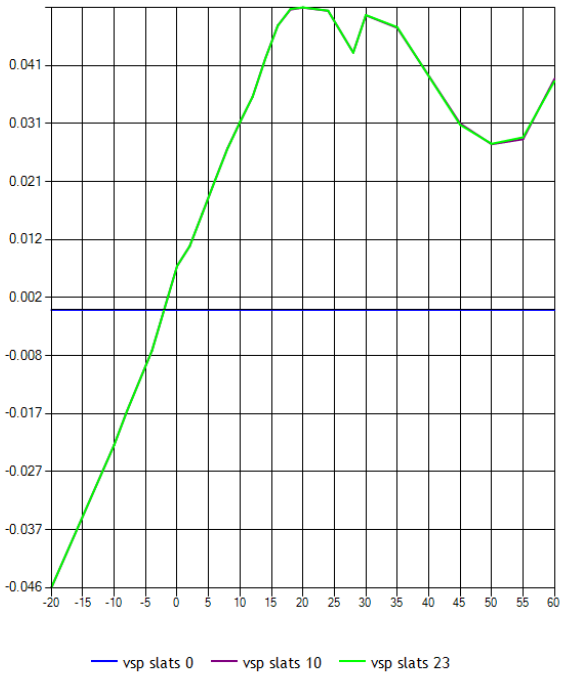
PITCH MOMENT DUE TO RUDDER DEFLECTION

CMMDRD(alpha,beta)



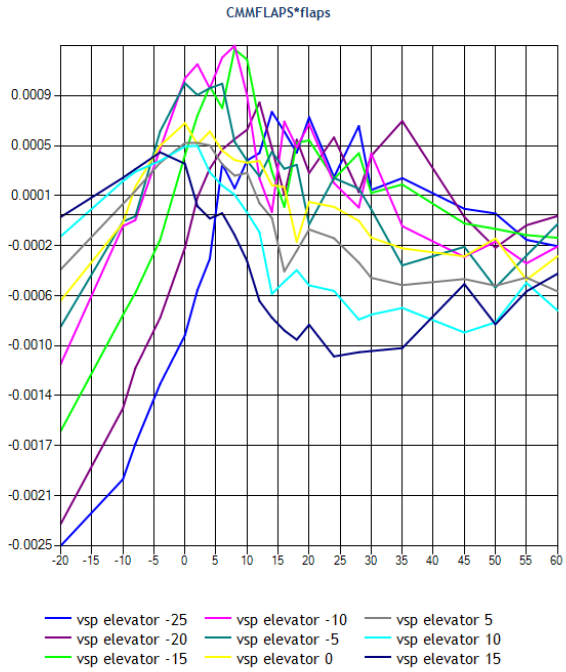
PITCH MOMENT DUE TO SLATS

CMMDSL(alpha,slats)



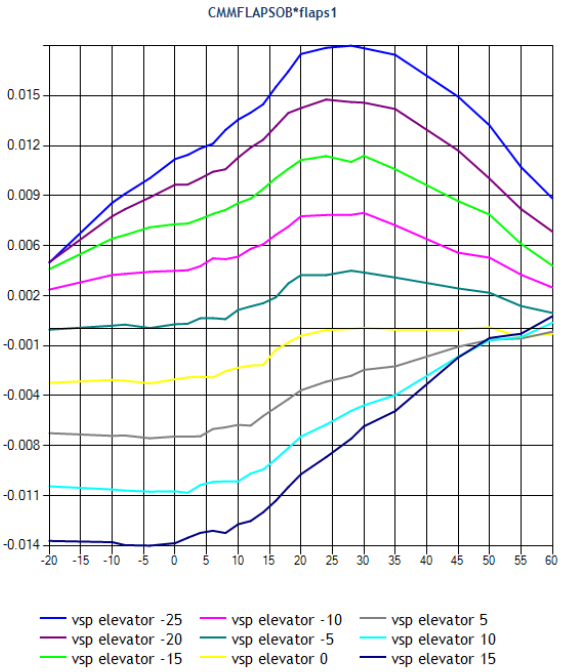
PITCHING MOMENT DUE TO FLAPS INBOARD

CMMFLAPS(alpha,elevator)



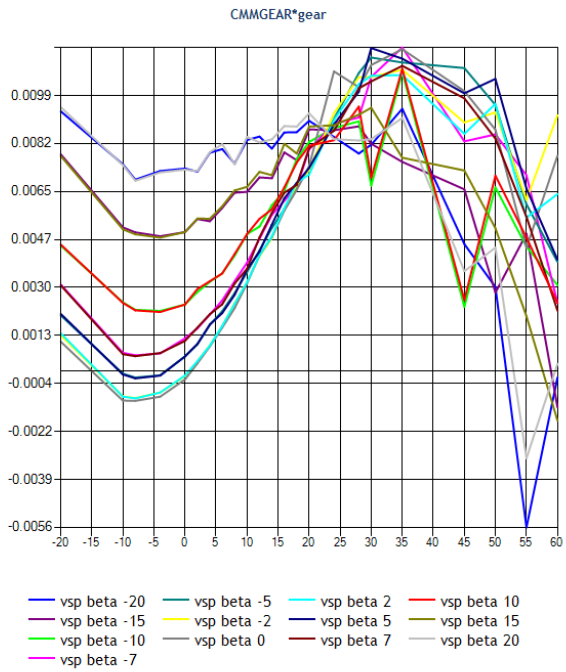
PITCHING MOMENT DUE TO FLAPS OUTBOARD

CMMFLAPSOB(alpha,elevator)



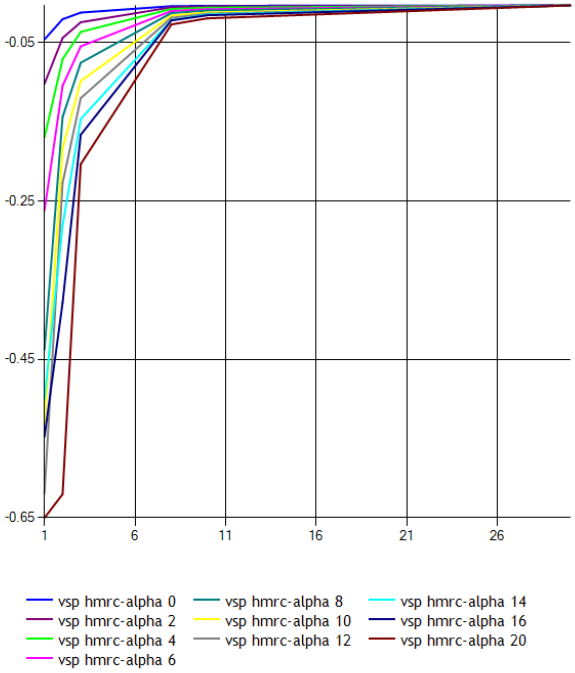
PITCHING MOMENT DUE TO GEAR

CMMGEAR(alpha,beta)



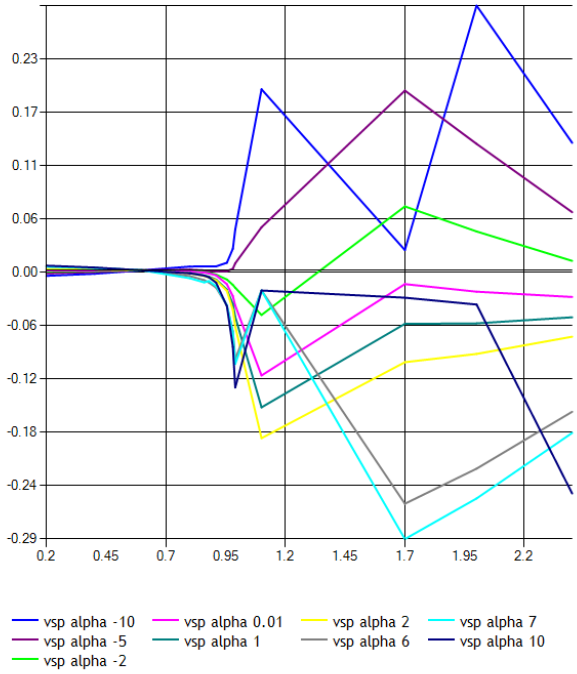
PITCHING MOMENT DUE TO GROUND EFFECT

CMMDGE(hmrc,hmrc-alpha)



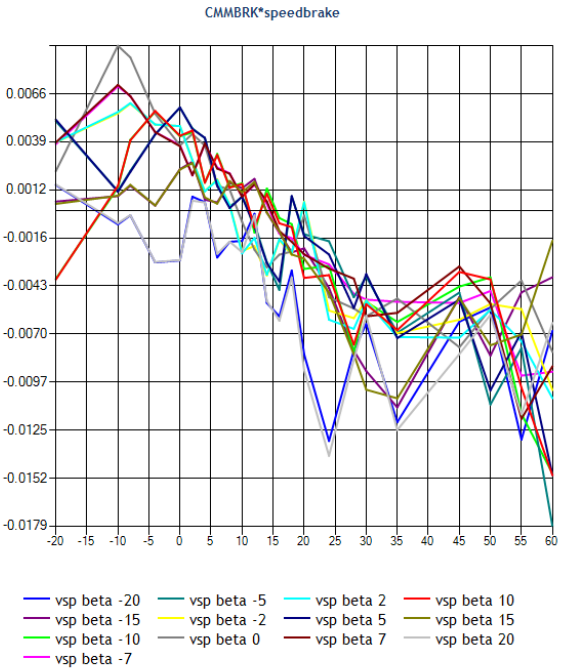
PITCHING MOMENT DUE TO MACH

CMMMN(mach,alpha)



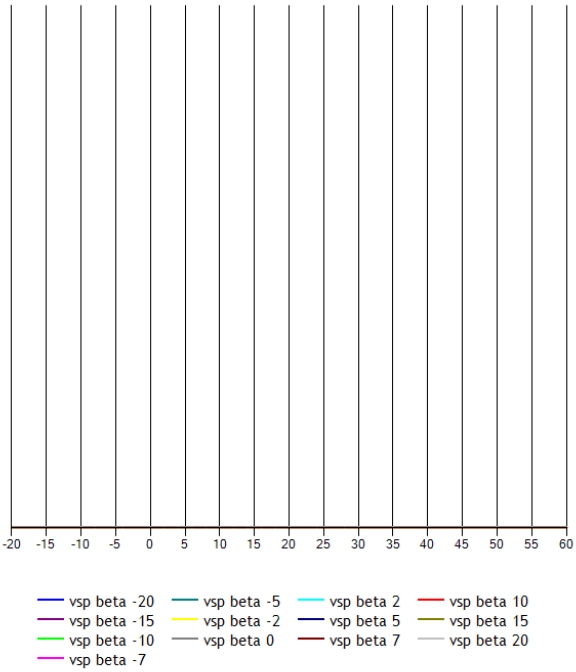
PITCHING MOMENT DUE TO SPEEDBRAKE

CMMBRK(alpha,beta)



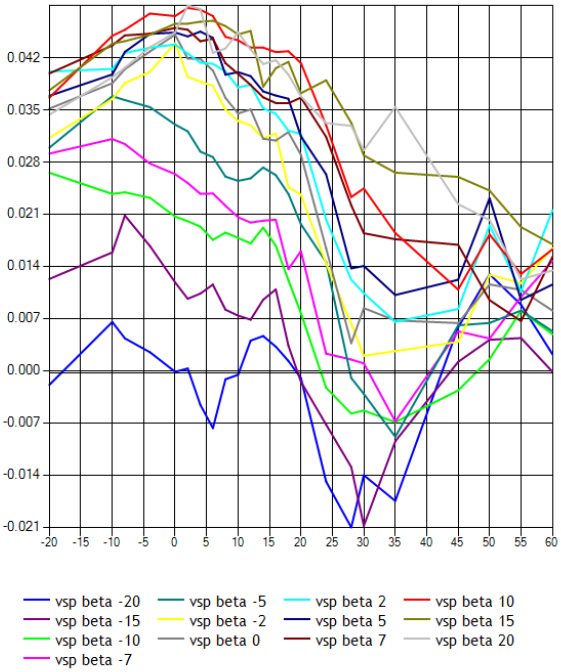
PITCHING MOMENT DUE TO SPOILERS LEFT

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



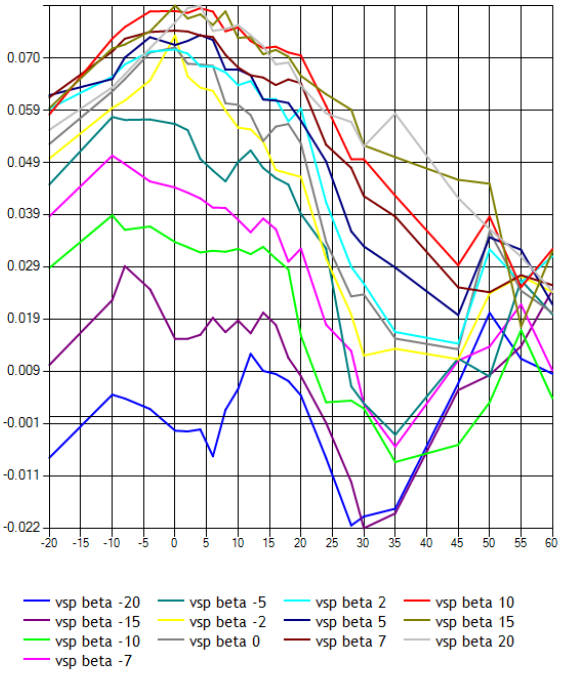
PITCHING MOMENT DUE TO SPOILERS LEFT

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



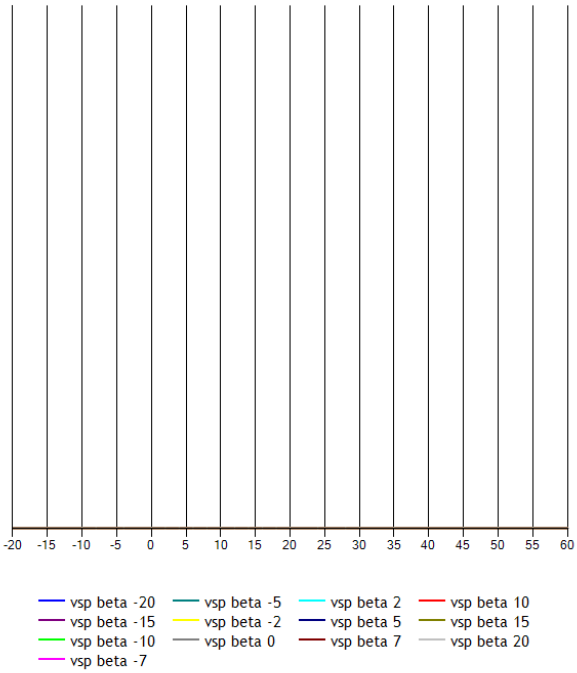
PITCHING MOMENT DUE TO SPOILERS LEFT

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



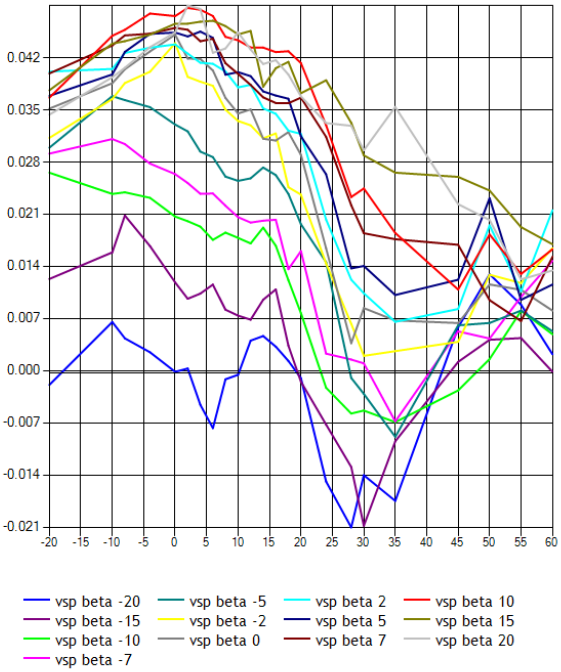
PITCHING MOMENT DUE TO SPOILERS RIGHT

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



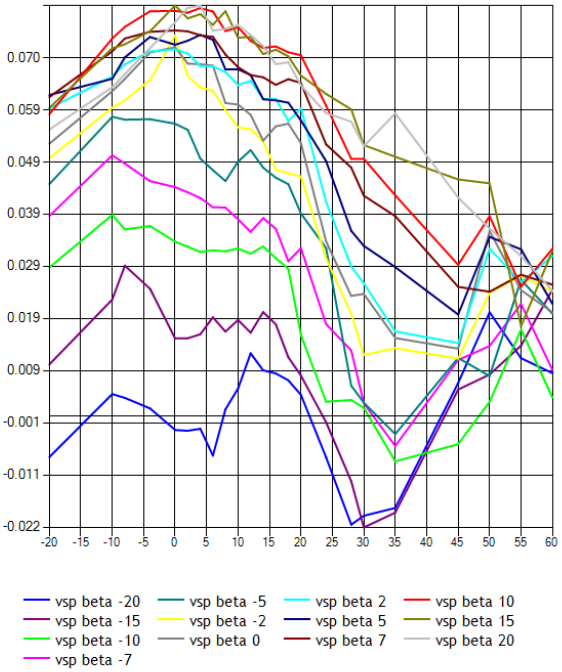
PITCHING MOMENT DUE TO SPOILERS RIGHT

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



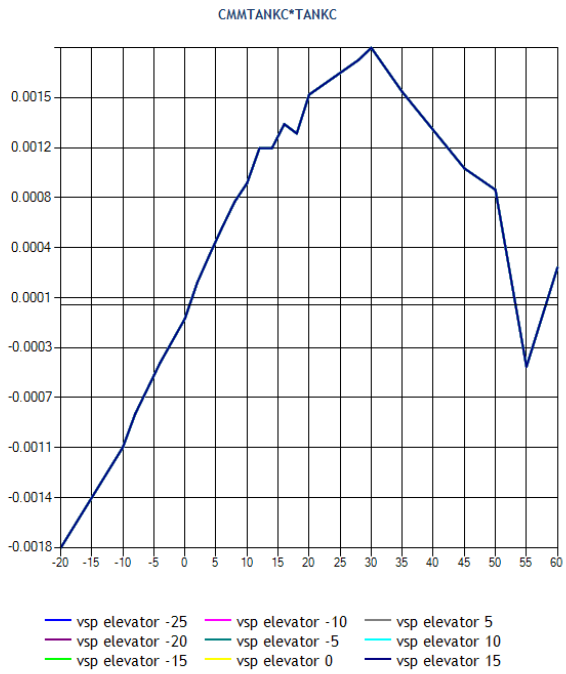
PITCHING MOMENT DUE TO SPOILERS RIGHT

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



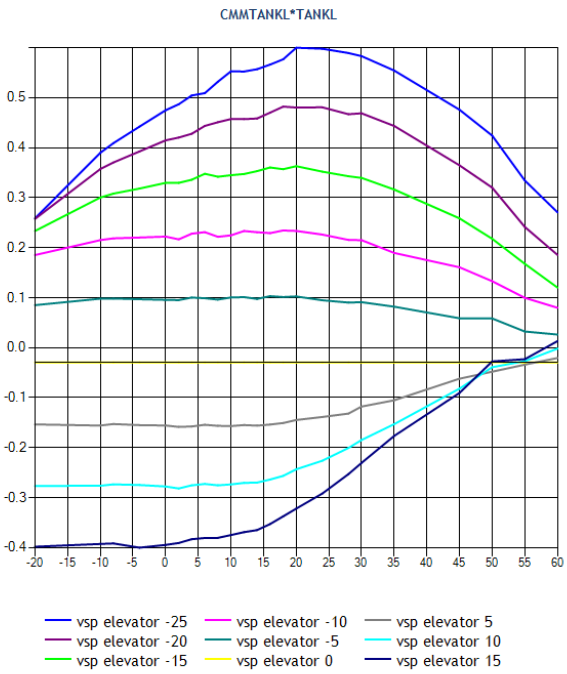
PITCHING MOMENT INCREMENT DUE TO CENTRE TANK

CMMTANKC(alpha,elevator)



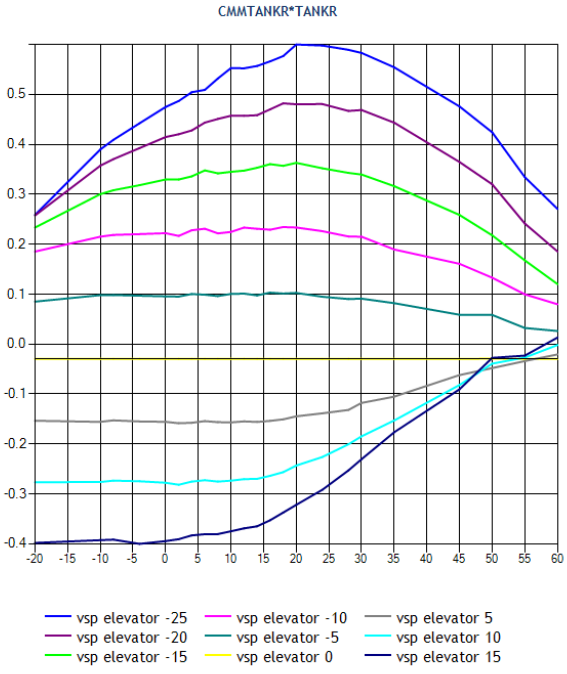
PITCHING MOMENT INCREMENT DUE TO LEFT WING TANK

CMMTANKL(alpha,elevator)



PITCHING MOMENT INCREMENT DUE TO RIGHT WING TANK

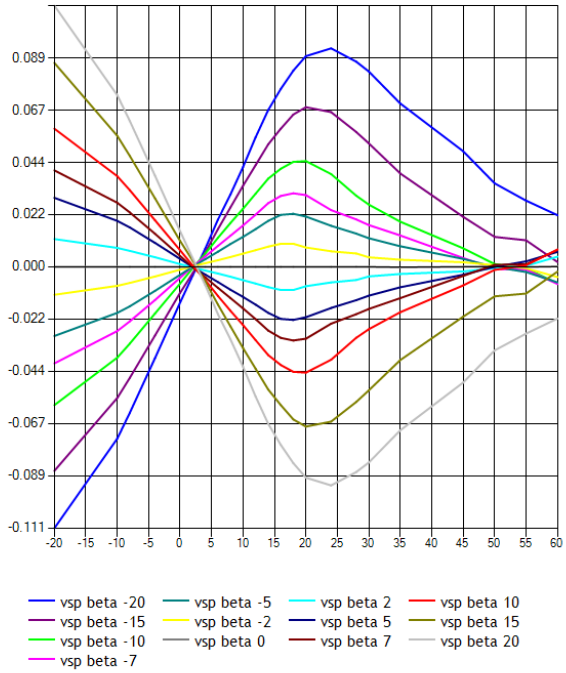
CMMTANKR(alpha,elevator)



ROLL

BASE ROLLING MOMENT

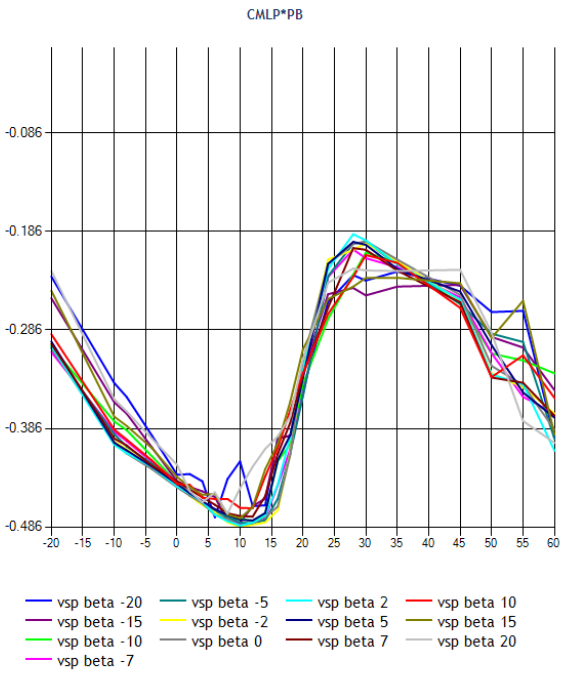
CML1(alpha,beta)



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

ROLL DAMPING DERIVATIVE

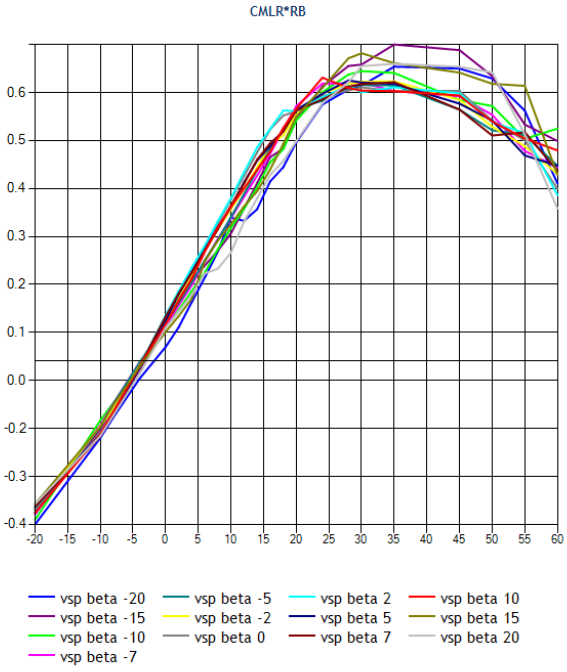
CMLP(alpha,beta)



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

ROLL DERIVATIVE MOMENT DUE TO YAW RATE

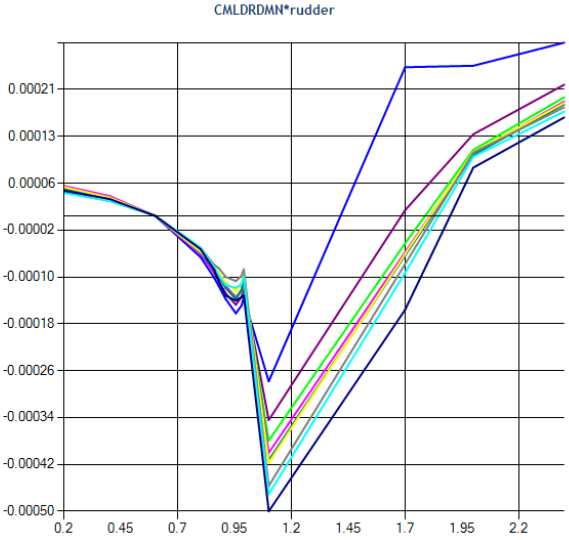
CMLR(alpha,beta)



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

ROLL MOMENT CHANGE DUE TO MACH DUE TO RUDDER DEFLECTION

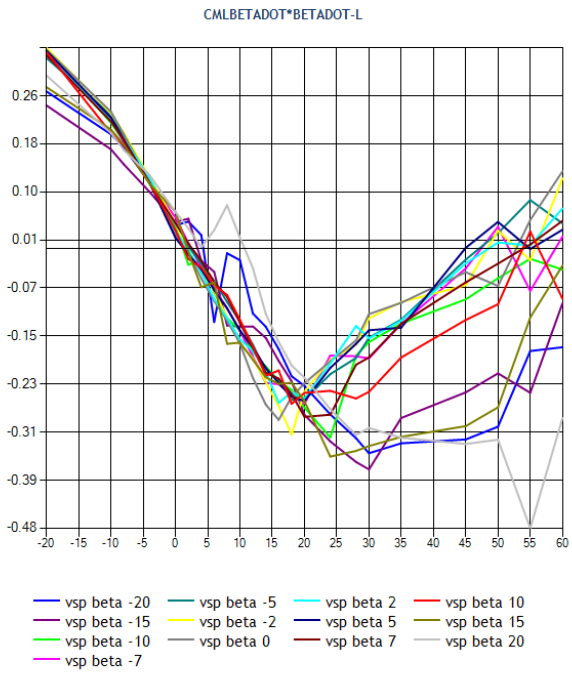
CMLDRDMN(mach,alpha)



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

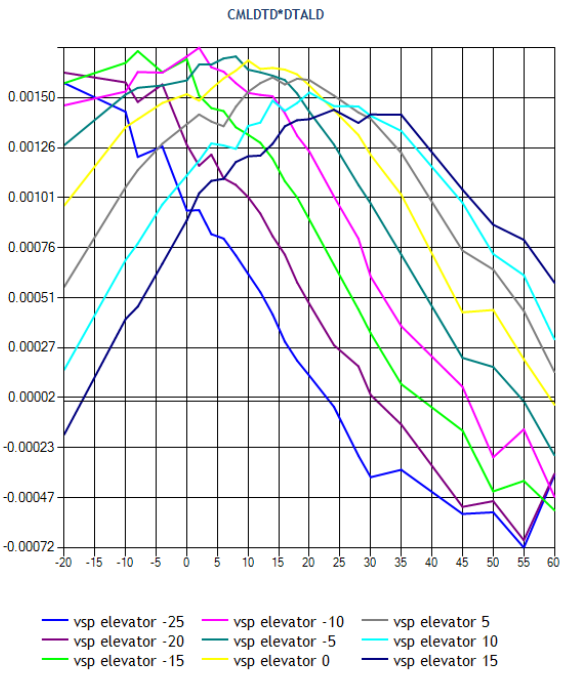
ROLL MOMENT DERIVATIVE FOR BETA DOT

CMLBETADOT(alpha,beta)



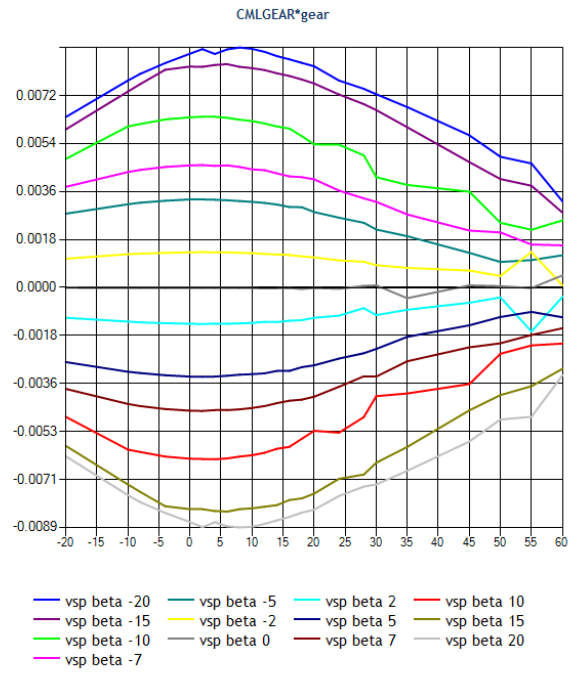
ROLL MOMENT DUE TO DIFFERENTIAL TAIL DEFLECTION

CMLDTD(alpha,elevator)



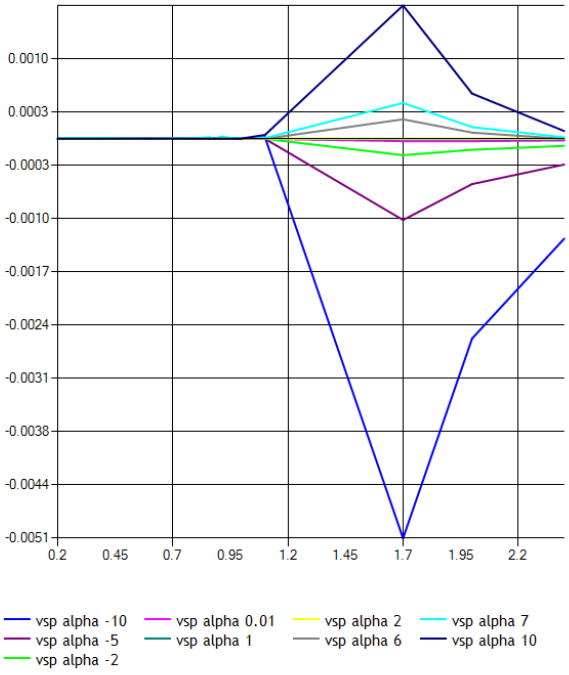
ROLL MOMENT DUE TO GEAR

CMLGEAR(alpha,beta)



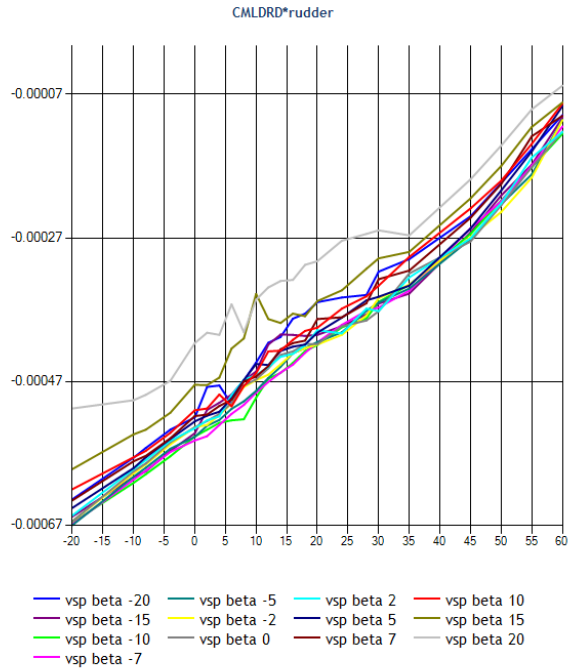
ROLL MOMENT DUE TO MACH

CMLMN(mach,alpha)



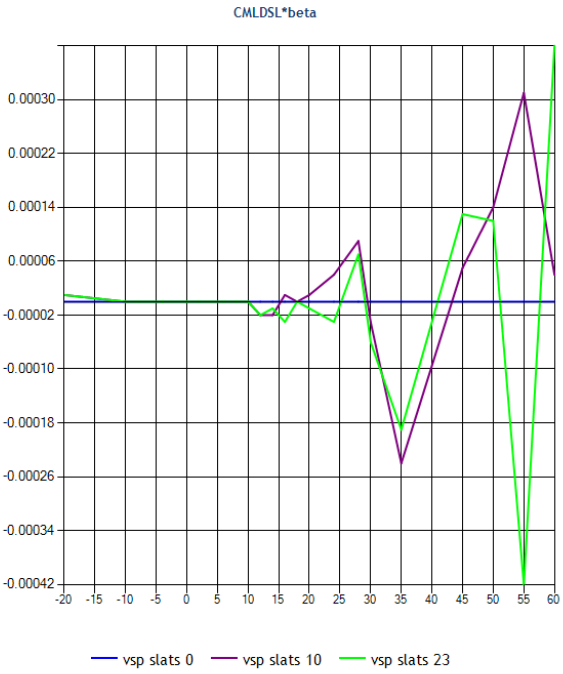
ROLL MOMENT DUE TO RUDDER DEFLECTION

CMLDRD(alpha,beta)



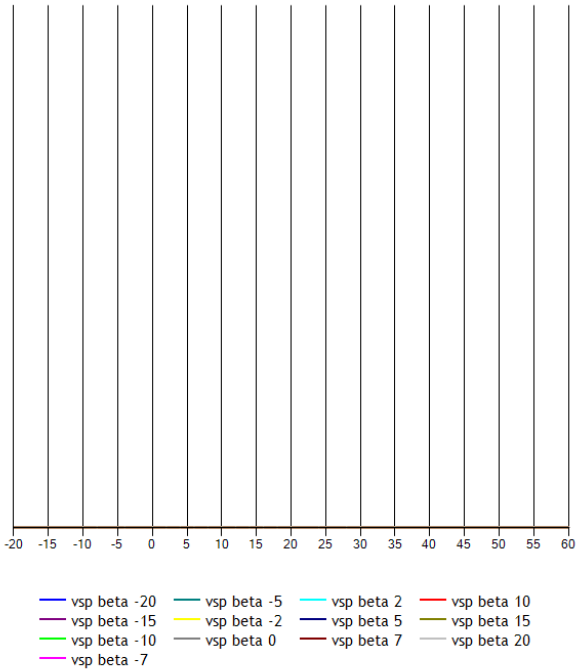
ROLL MOMENT DUE TO SLATS

CMLDSL(alpha,slats)



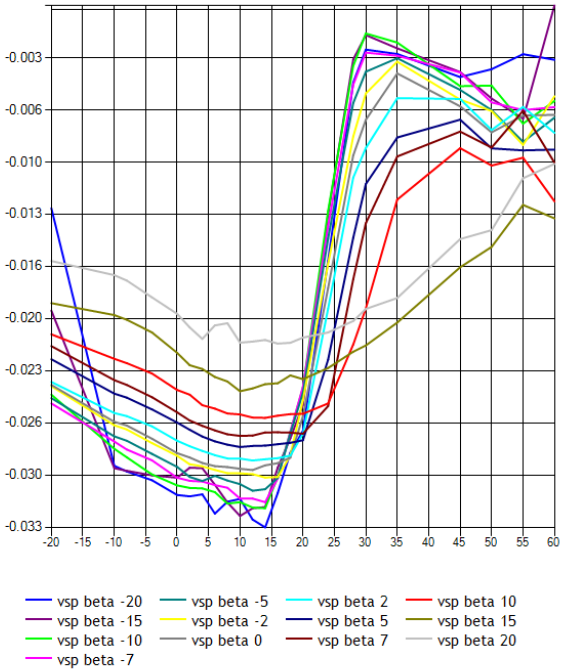
ROLL MOMENT DUE TO SPOILERS LEFT

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



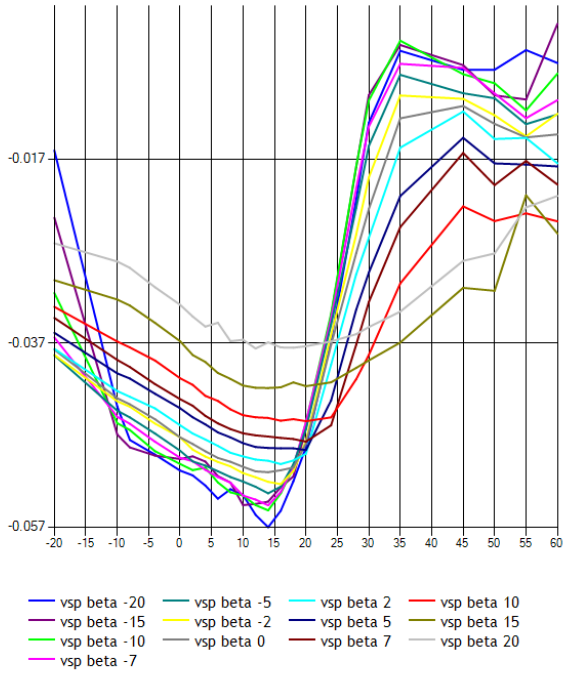
ROLL MOMENT DUE TO SPOILERS LEFT

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



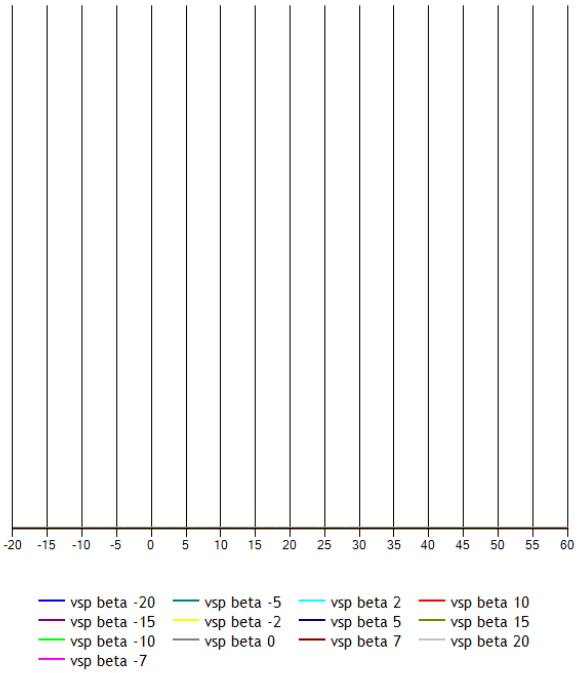
ROLL MOMENT DUE TO SPOILERS LEFT

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



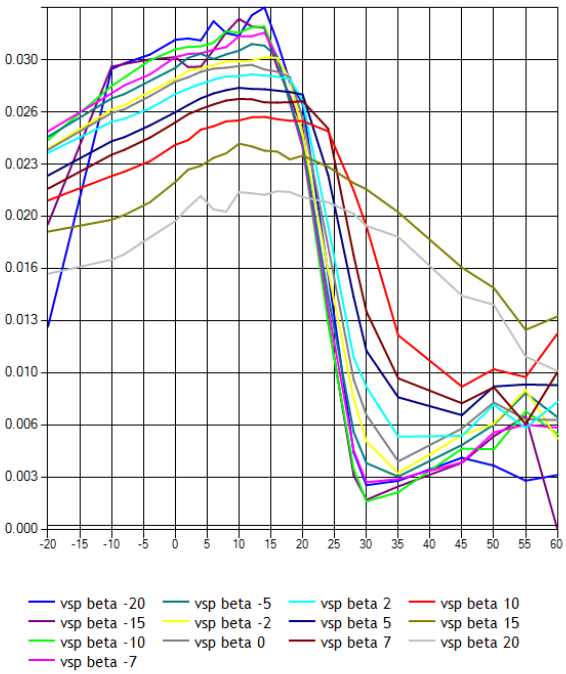
ROLL MOMENT DUE TO SPOILERS RIGHT

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



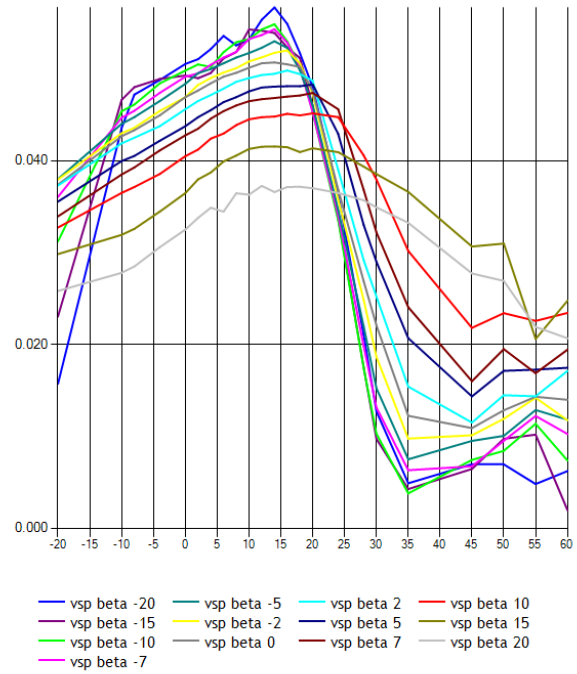
ROLL MOMENT DUE TO SPOILERS RIGHT

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



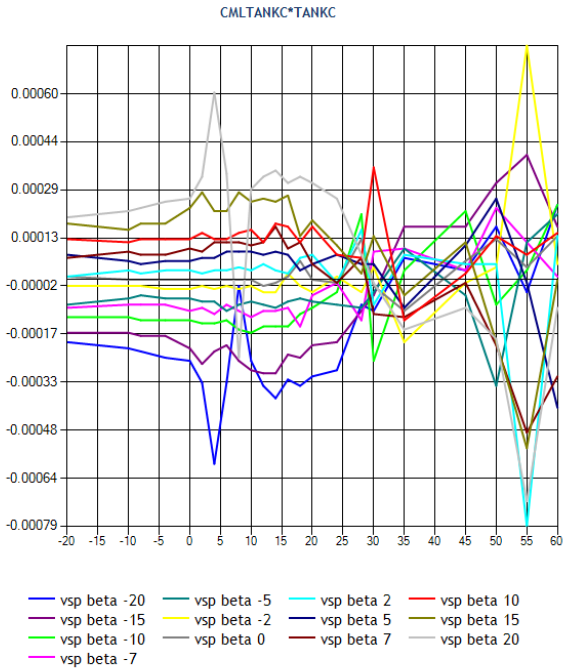
ROLL MOMENT DUE TO SPOILERS RIGHT

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



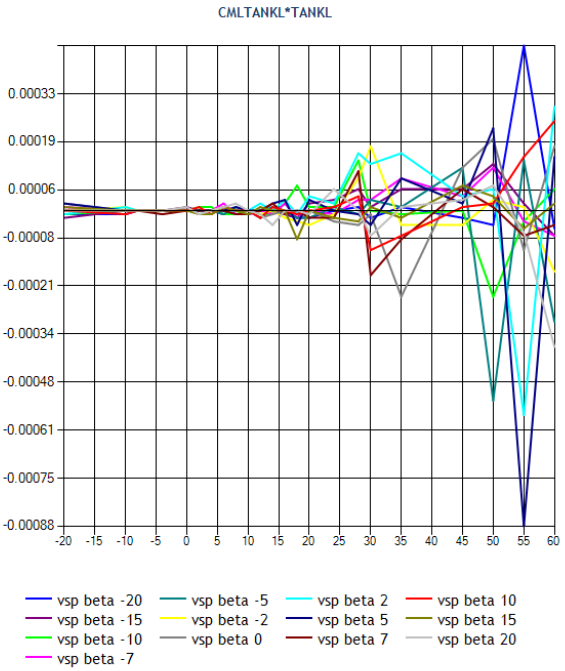
ROLLING MOMENT INCREMENT DUE TO CENTRE TANK

CMLTANKC(alpha,beta)



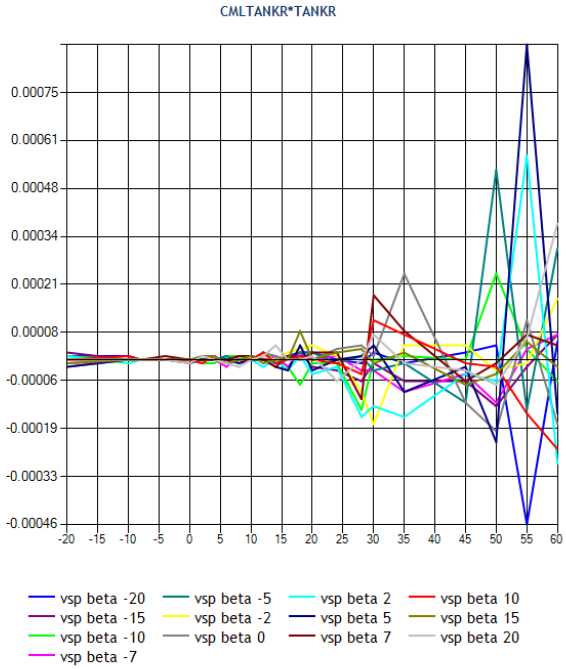
ROLLING MOMENT INCREMENT DUE TO LEFT WING TANK

CMLTANKL(alpha,beta)



ROLLING MOMENT INCREMENT DUE TO RIGHT WING TANK

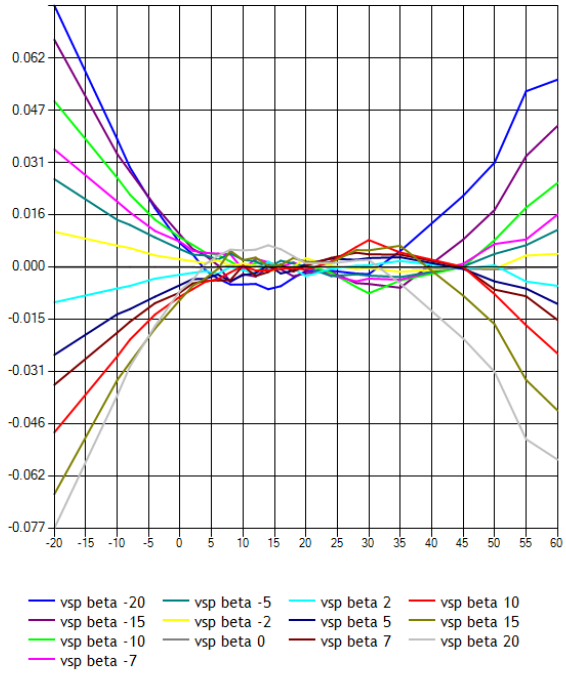
CMLTANKR(alpha,beta)



YAW

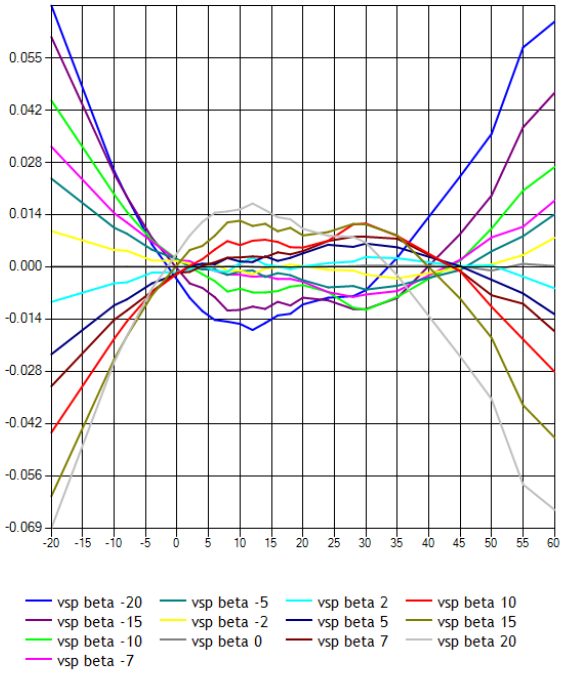
BASE YAWING MOMENT

CMN1 (alpha,beta,elevator=-25)



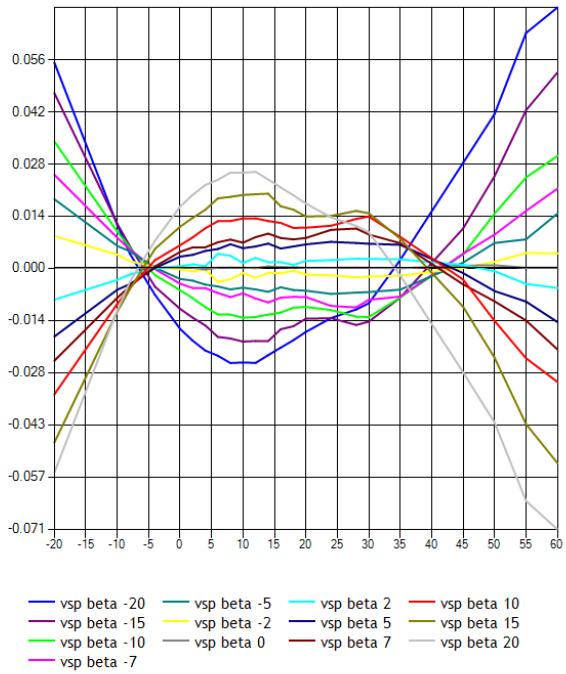
BASE YAWING MOMENT

CMN1 (alpha,beta,elevator=-20)



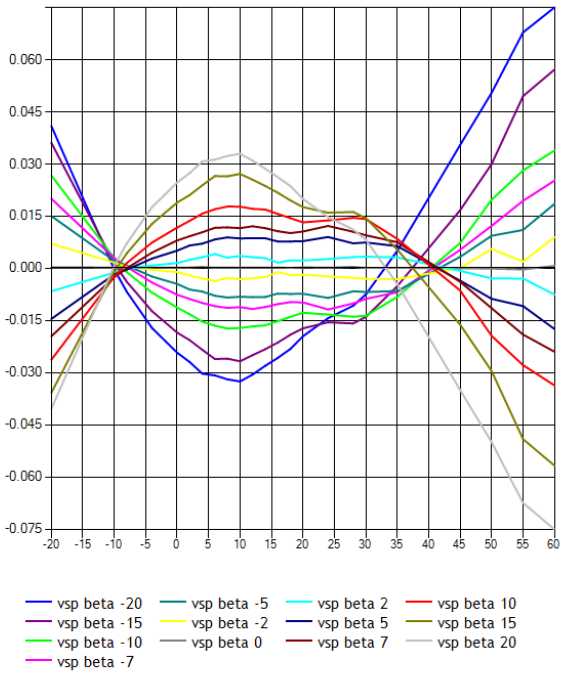
BASE YAWING MOMENT

CMN1 (alpha,beta,elevator=-15)



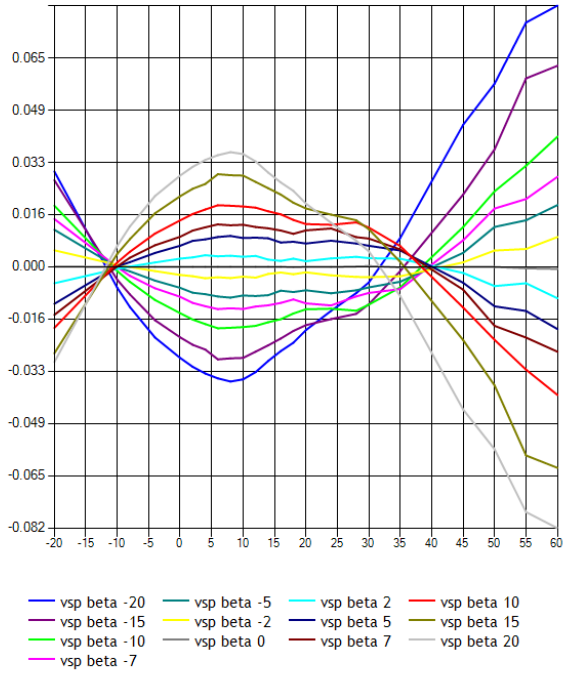
BASE YAWING MOMENT

CMN1 (alpha,beta,elevator=-10)



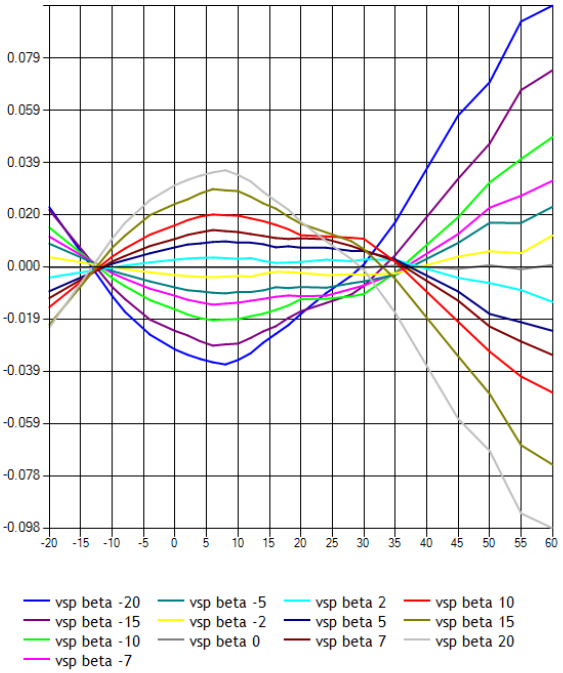
BASE YAWING MOMENT

CMN1 (alpha,beta,elevator=-5)



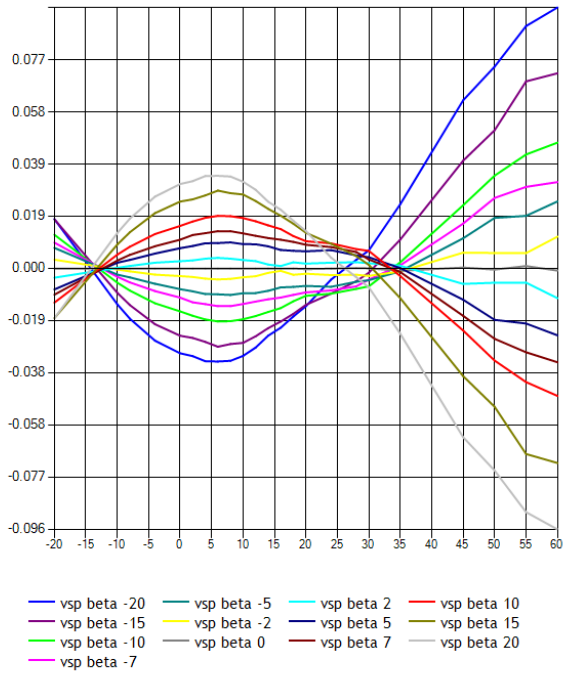
BASE YAWING MOMENT

CMN1 (alpha,beta,elevator=0)



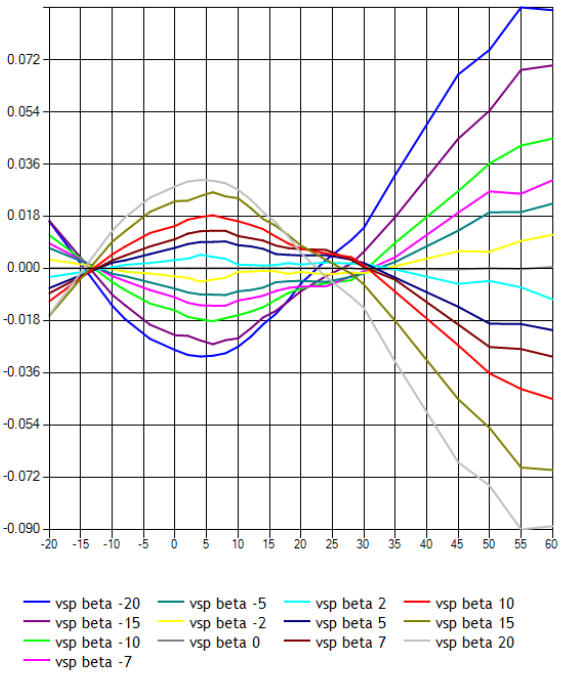
BASE YAWING MOMENT

CMN1 (alpha,beta,elevator=5)



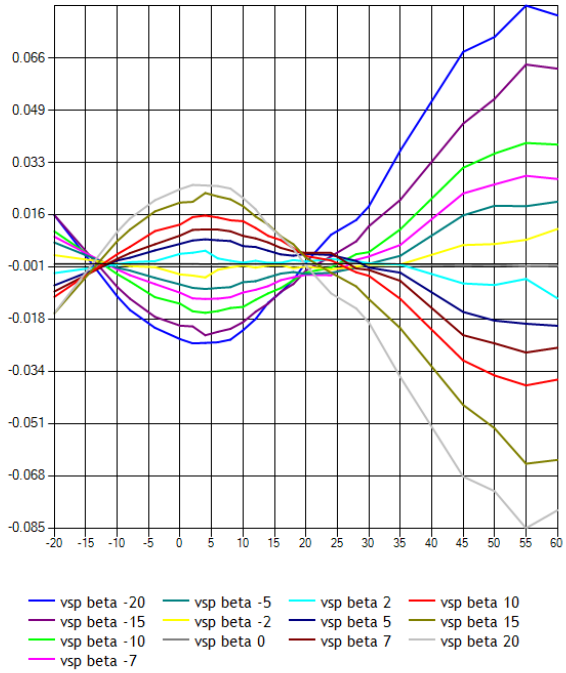
BASE YAWING MOMENT

CMN1 (alpha,beta,elevator=10)



BASE YAWING MOMENT

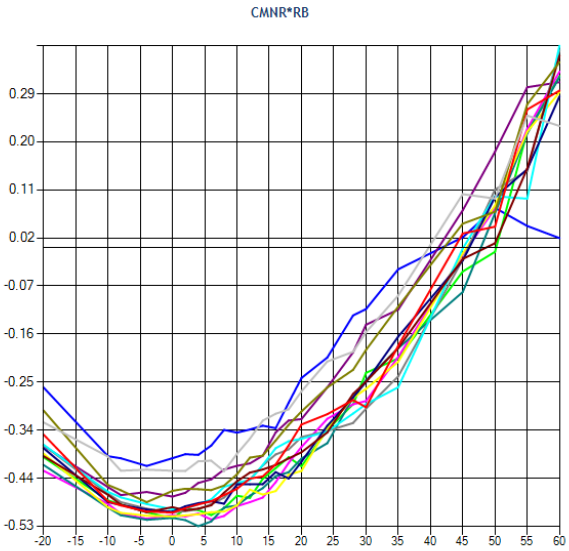
CMN1 (alpha,beta,elevator=15)



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

YAW DAMPING DERIVATIVE

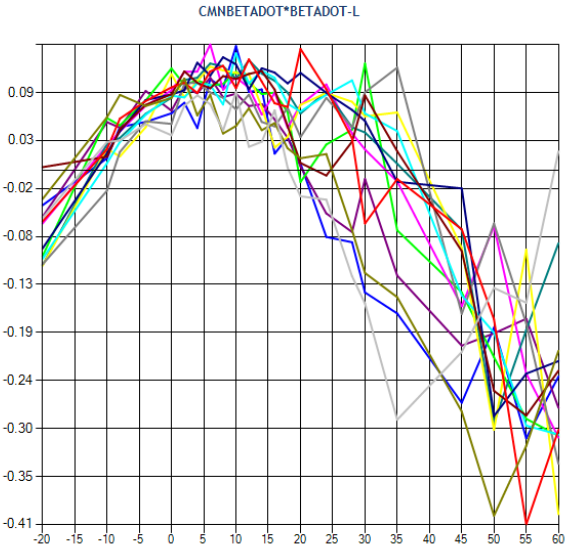
CMNR(alpha,beta)



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

YAW DERIVATIVE MOMENT DUE TO BETADOT

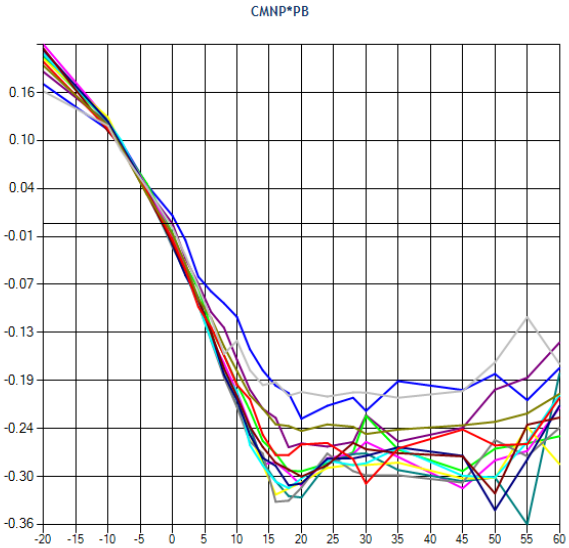
CMNBETADOT(alpha,beta)



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

YAW DERIVATIVE MOMENT DUE TO ROLL RATE

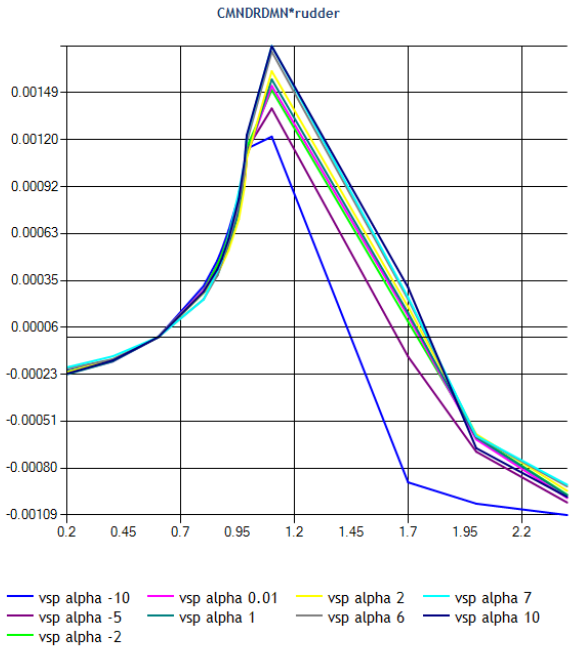
CMNP(alpha,beta)



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

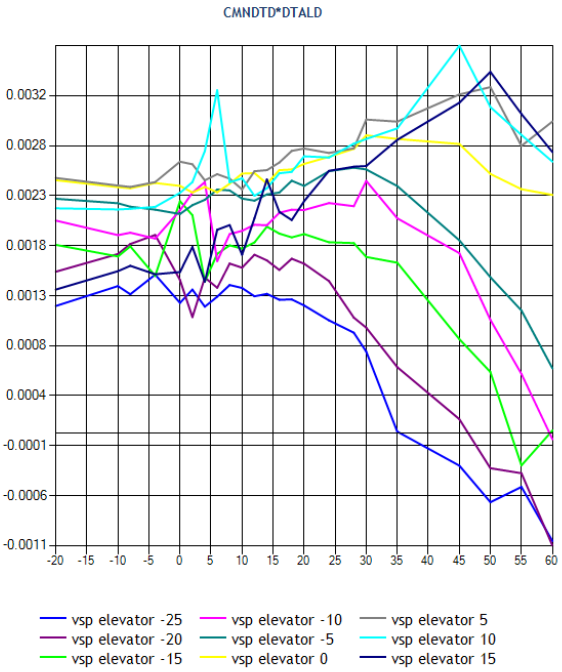
YAWING MOMENT CHANGE DUE TO MACH DUE TO RUDDER DEFLECTION

CMNDRDMN(mach,alpha)



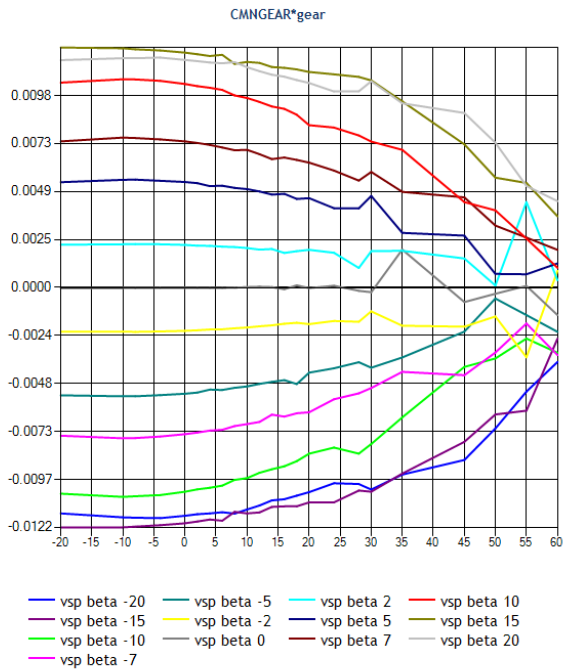
YAWING MOMENT DUE TO DIFFERENTIAL TAIL DEFLECTION

CMNDTD(alpha,elevator)



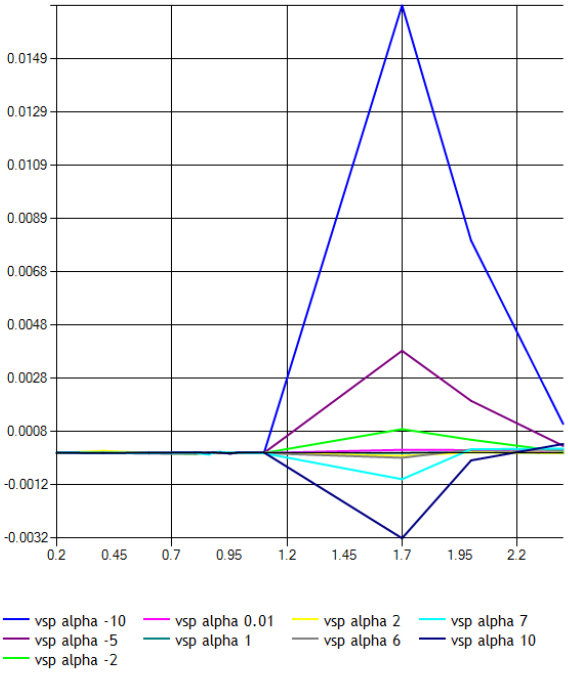
YAWING MOMENT DUE TO GEAR

CMNGEAR(alpha,beta)



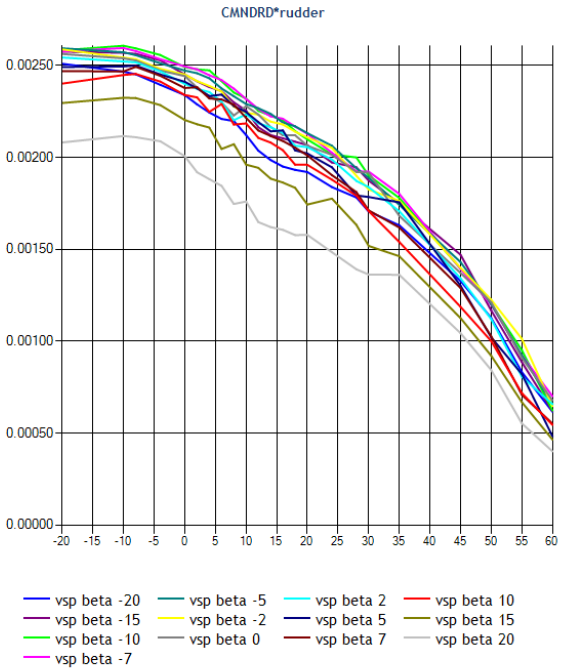
YAWING MOMENT DUE TO MACH

CMNMN(mach,alpha)



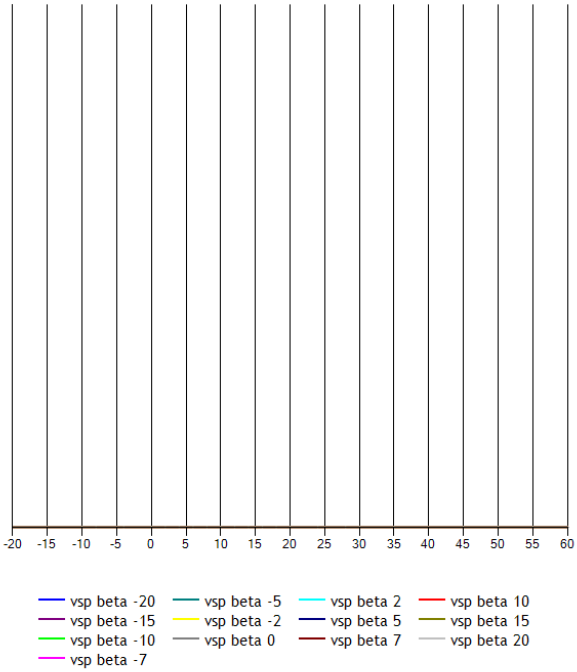
YAWING MOMENT DUE TO RUDDER DEFLECTION

CMNDRD(alpha,beta)



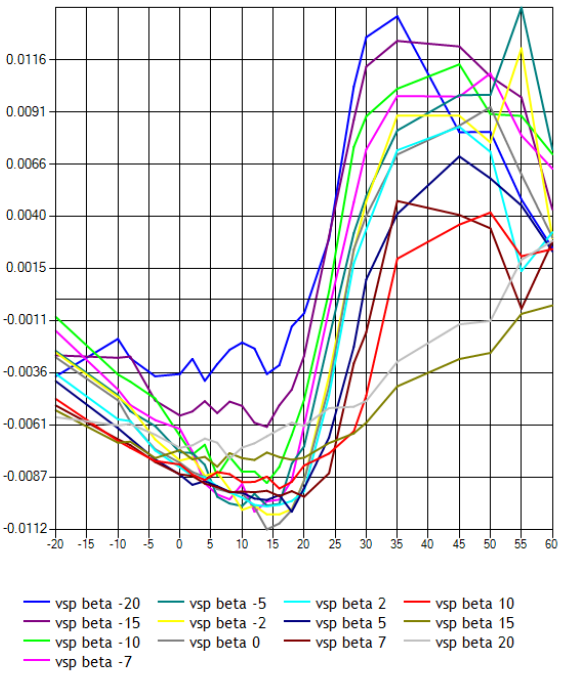
YAWING MOMENT DUE TO SPOILERS LEFT

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



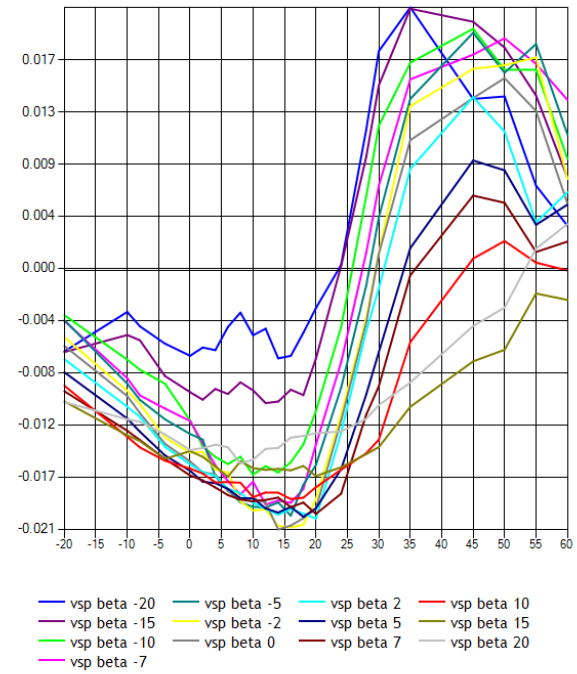
YAWING MOMENT DUE TO SPOILERS LEFT

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



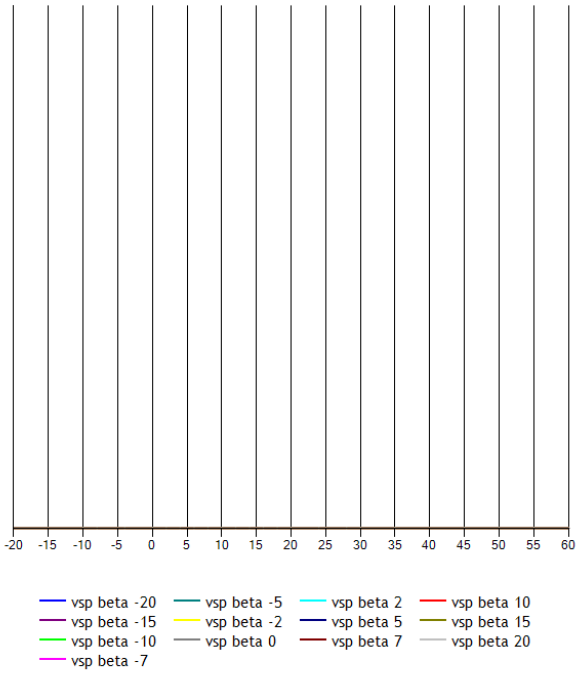
YAWING MOMENT DUE TO SPOILERS LEFT

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



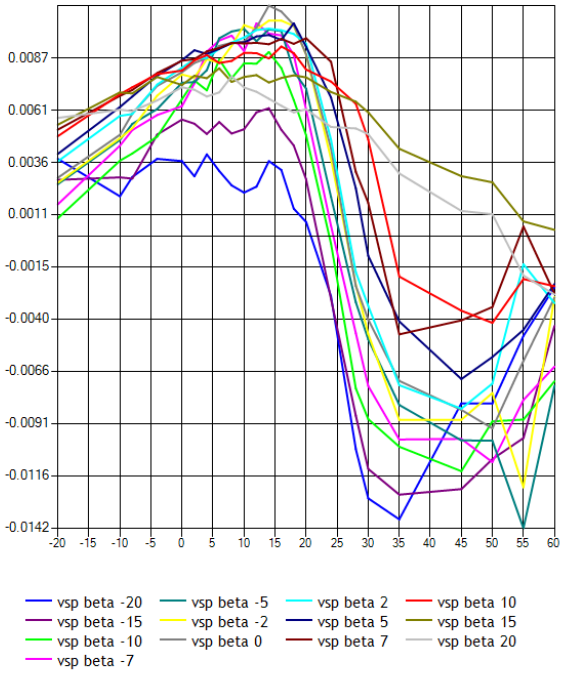
YAWING MOMENT DUE TO SPOILERS RIGHT

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



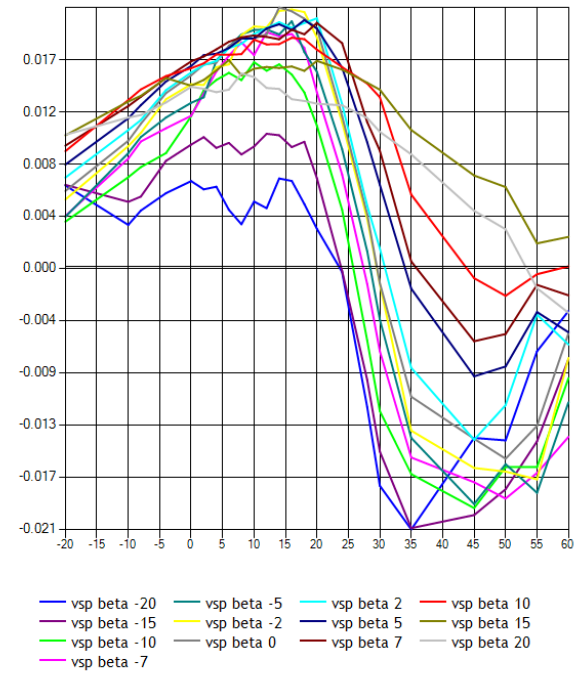
YAWING MOMENT DUE TO SPOILERS RIGHT

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



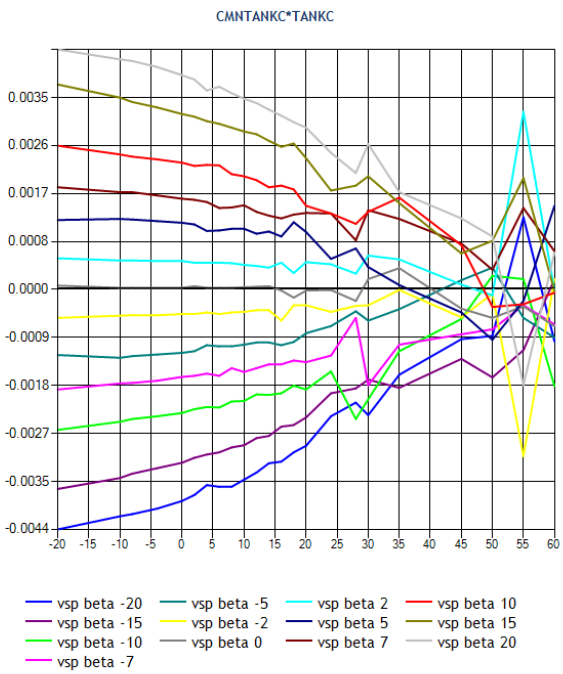
YAWING MOMENT DUE TO SPOILERS RIGHT

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



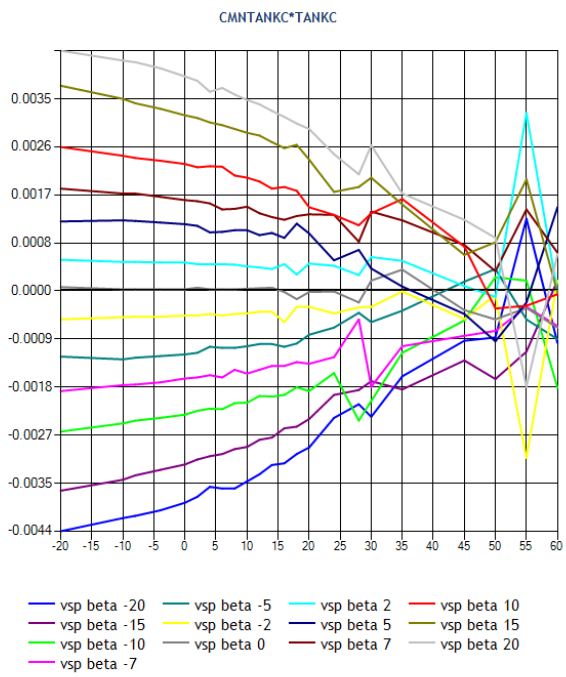
YAWING MOMENT INCREMENT DUE TO CENTRE TANK

CMNTANKC (alpha,beta,elevator=-25)



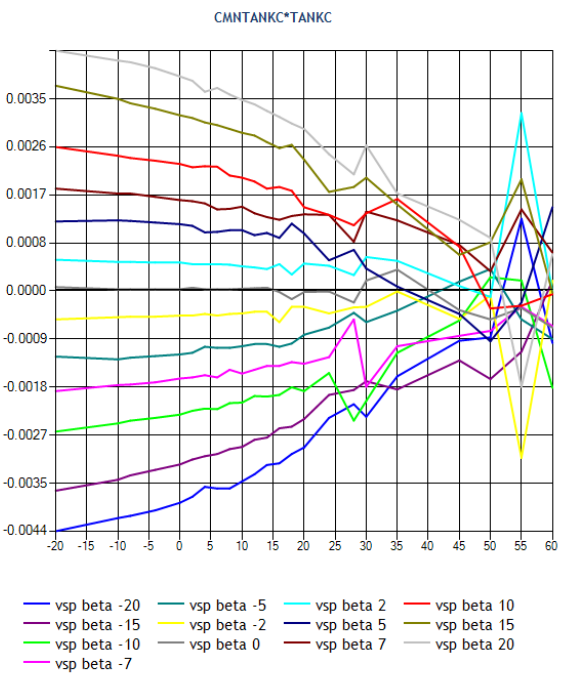
YAWING MOMENT INCREMENT DUE TO CENTRE TANK

CMNTANKC (alpha,beta,elevator=-20)



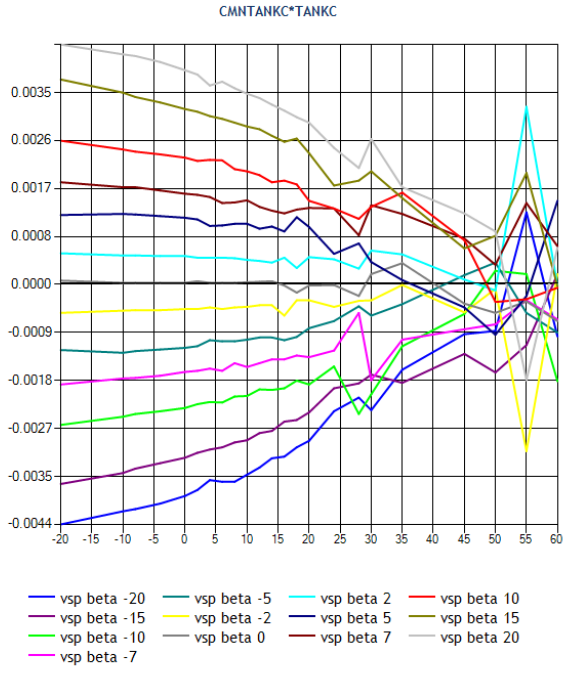
YAWING MOMENT INCREMENT DUE TO CENTRE TANK

CMNTANKC (alpha,beta,elevator=-15)



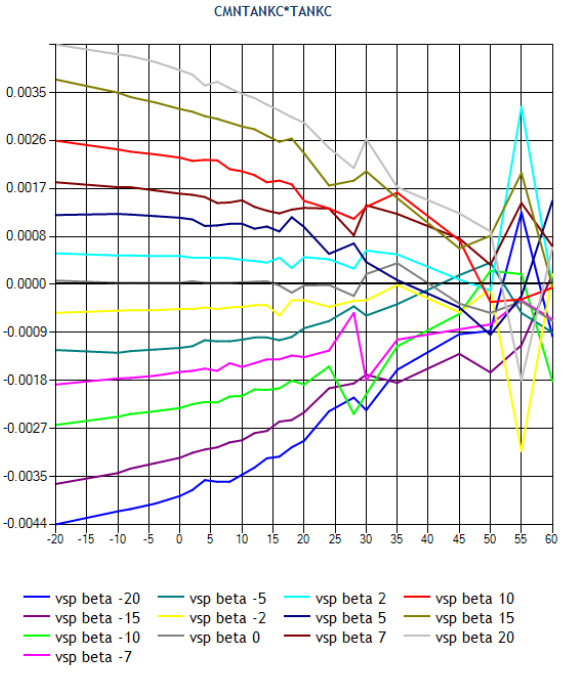
YAWING MOMENT INCREMENT DUE TO CENTRE TANK

CMNTANKC (alpha,beta,elevator=-10)



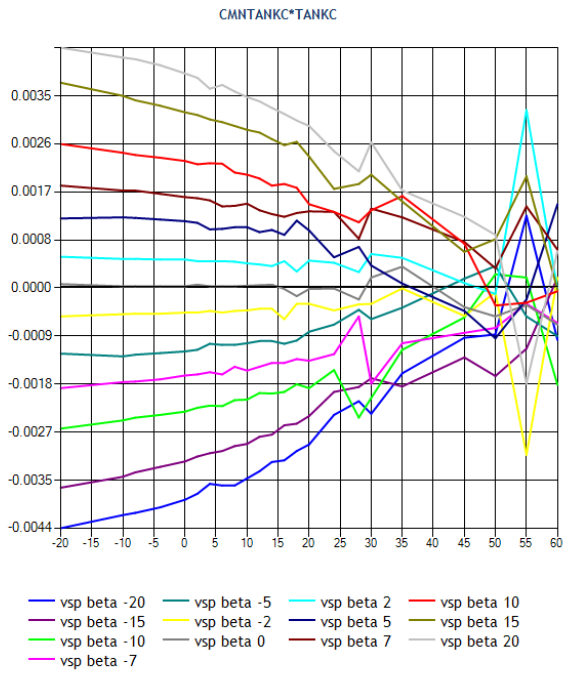
YAWING MOMENT INCREMENT DUE TO CENTRE TANK

CMNTANKC (alpha,beta,elevator=-5)



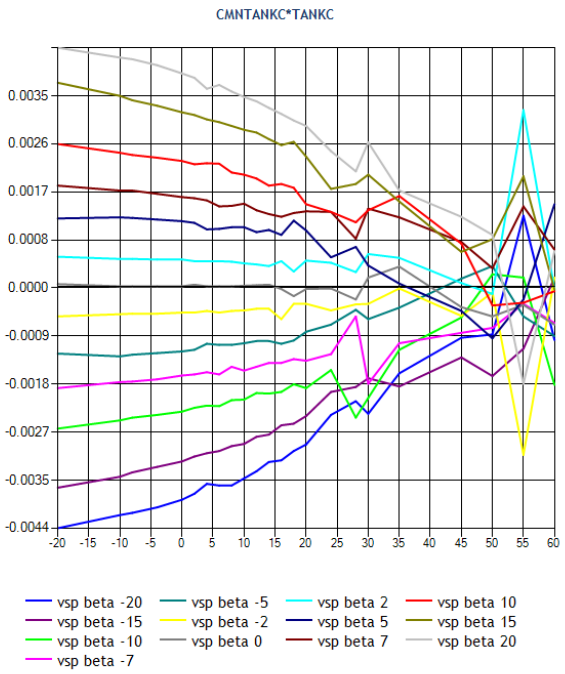
YAWING MOMENT INCREMENT DUE TO CENTRE TANK

CMNTANKC (alpha,beta,elevator=0)



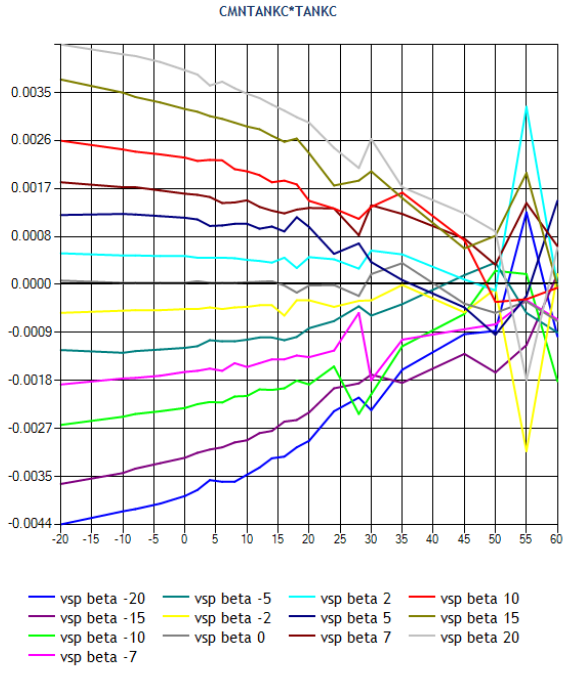
YAWING MOMENT INCREMENT DUE TO CENTRE TANK

CMNTANKC (alpha,beta,elevator=5)



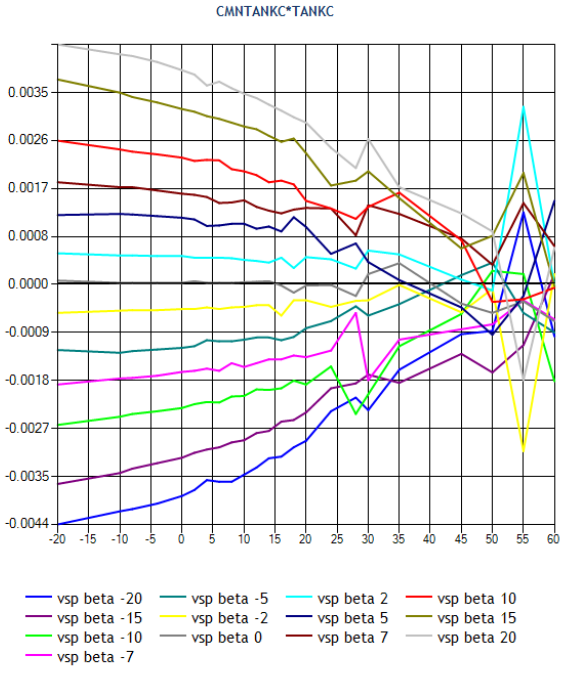
YAWING MOMENT INCREMENT DUE TO CENTRE TANK

CMNTANKC (alpha,beta,elevator=10)



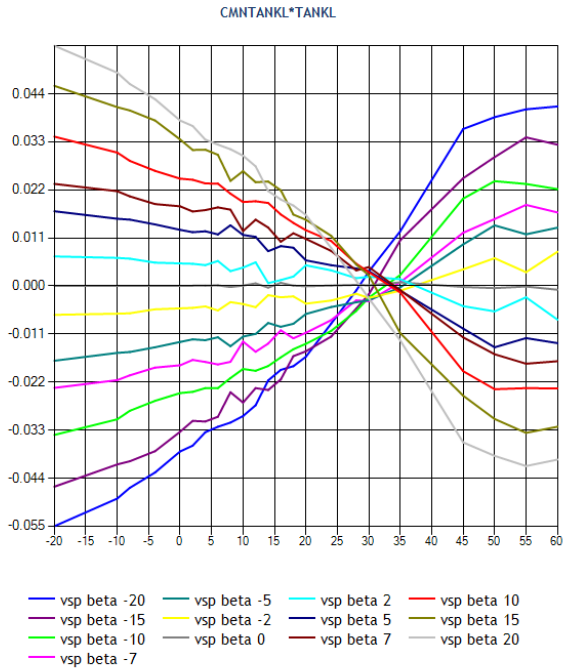
YAWING MOMENT INCREMENT DUE TO CENTRE TANK

CMNTANKC (alpha,beta,elevator=15)



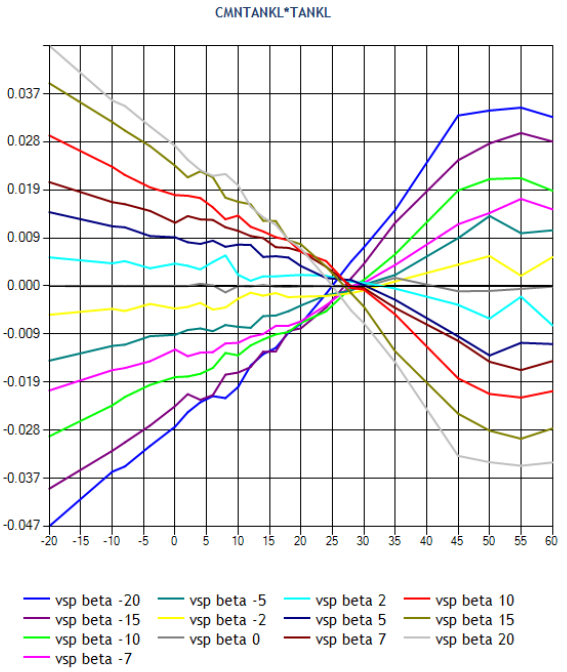
YAWING MOMENT INCREMENT DUE TO LEFT WING TANK

CMNTANKL (alpha,beta,elevator=-25)



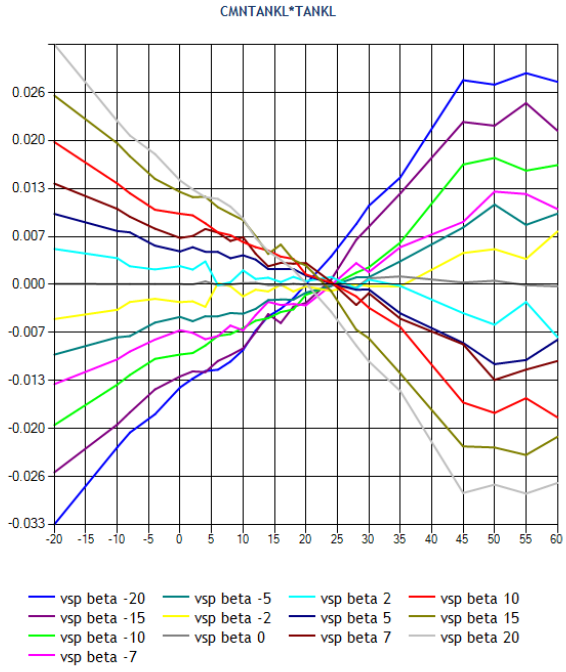
YAWING MOMENT INCREMENT DUE TO LEFT WING TANK

CMNTANKL (alpha,beta,elevator=-20)



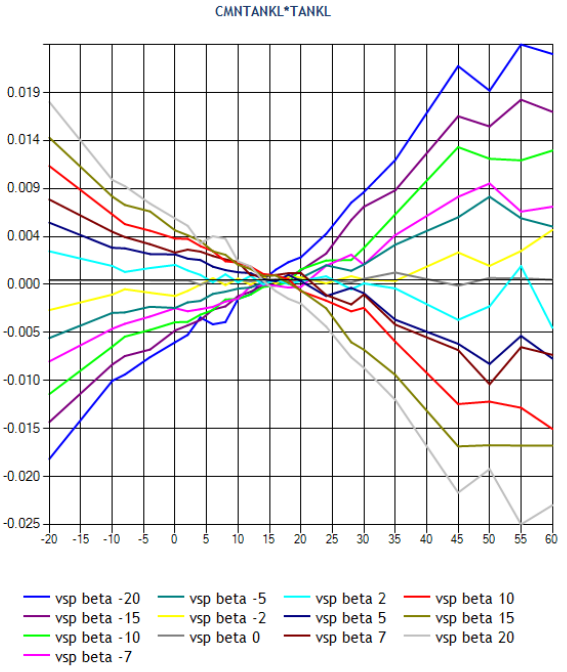
YAWING MOMENT INCREMENT DUE TO LEFT WING TANK

CMNTANKL (alpha,beta,elevator=-15)



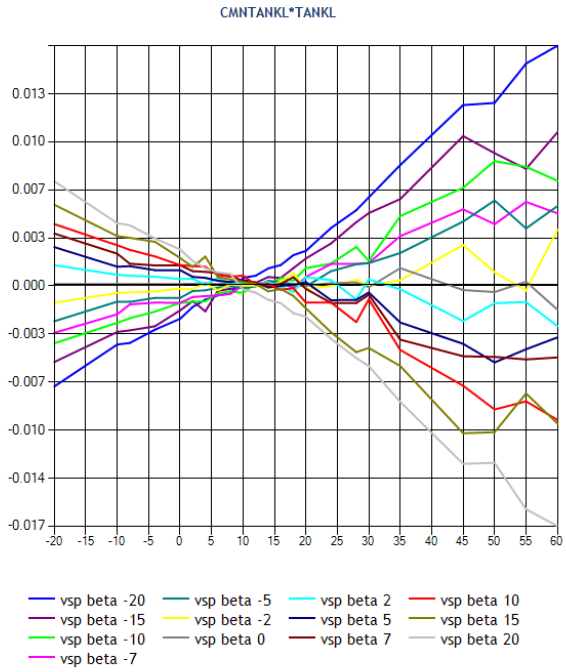
YAWING MOMENT INCREMENT DUE TO LEFT WING TANK

CMNTANKL (alpha,beta,elevator=-10)



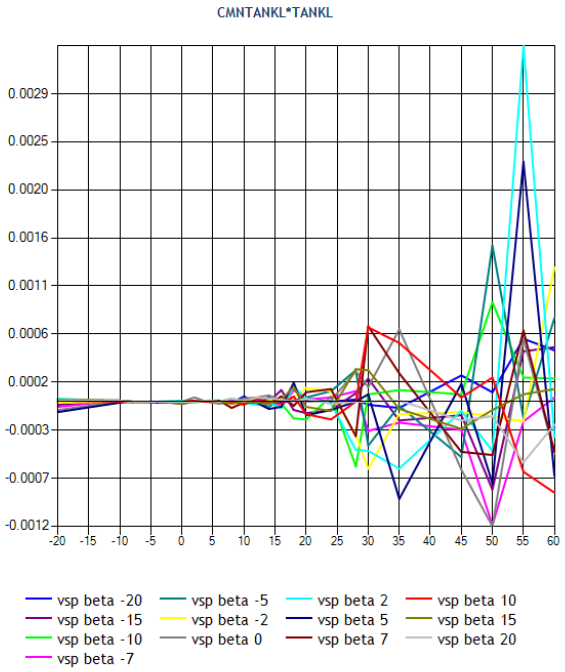
YAWING MOMENT INCREMENT DUE TO LEFT WING TANK

CMNTANKL (alpha,beta,elevator=-5)



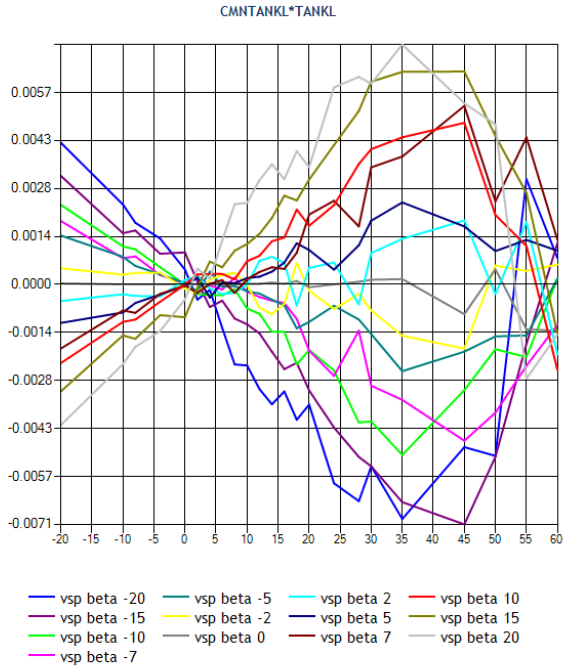
YAWING MOMENT INCREMENT DUE TO LEFT WING TANK

CMNTANKL (alpha,beta,elevator=0)



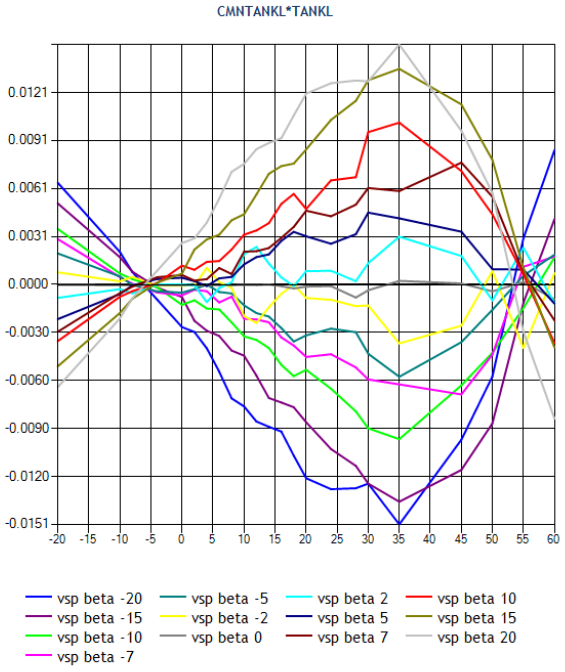
YAWING MOMENT INCREMENT DUE TO LEFT WING TANK

CMNTANKL (alpha,beta,elevator=5)



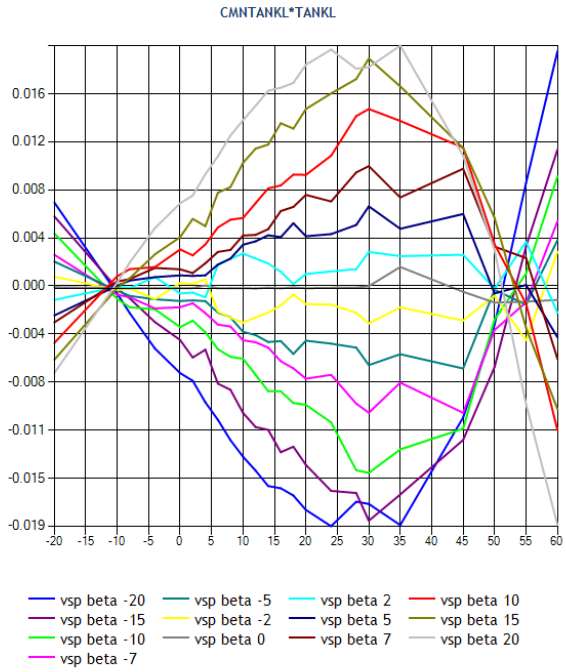
YAWING MOMENT INCREMENT DUE TO LEFT WING TANK

CMNTANKL (alpha,beta,elevator=10)



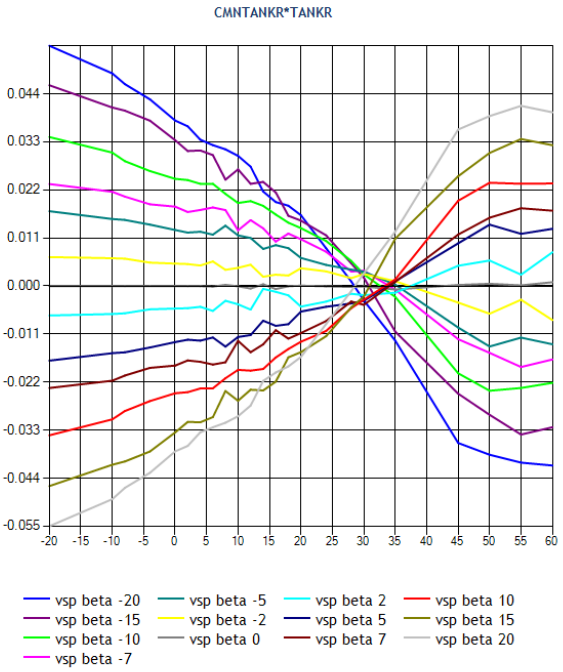
YAWING MOMENT INCREMENT DUE TO LEFT WING TANK

CMNTANKL (alpha,beta,elevator=15)



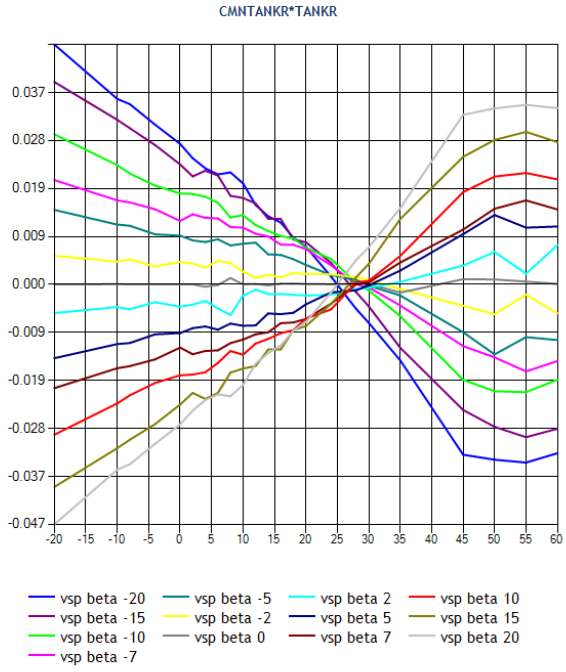
YAWING MOMENT INCREMENT DUE TO RIGHT WING TANK

CMNTANKR (alpha,beta,elevator=-25)



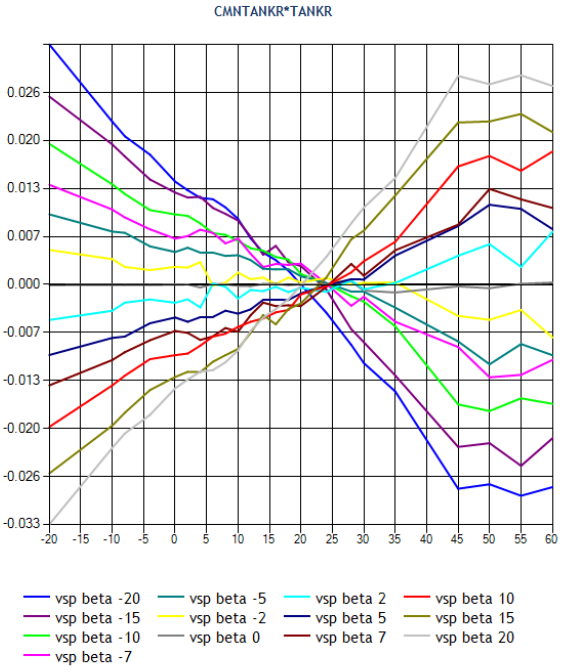
YAWING MOMENT INCREMENT DUE TO RIGHT WING TANK

CMNTANKR (alpha,beta,elevator=-20)



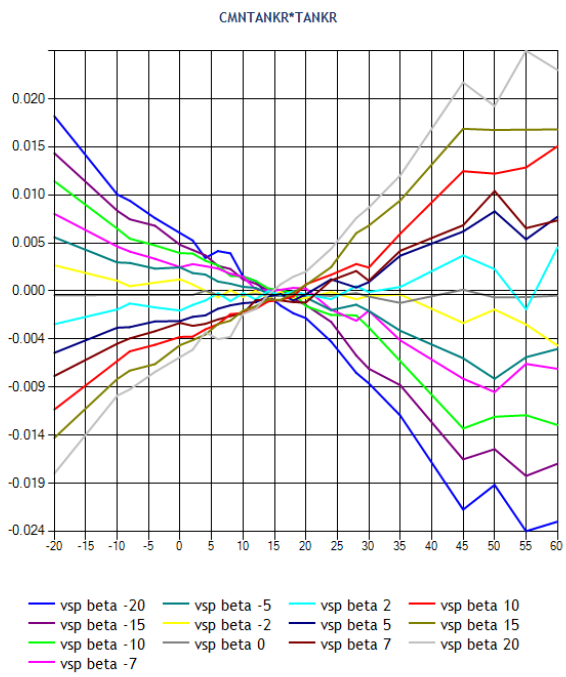
YAWING MOMENT INCREMENT DUE TO RIGHT WING TANK

CMNTANKR (alpha,beta,elevator=-15)



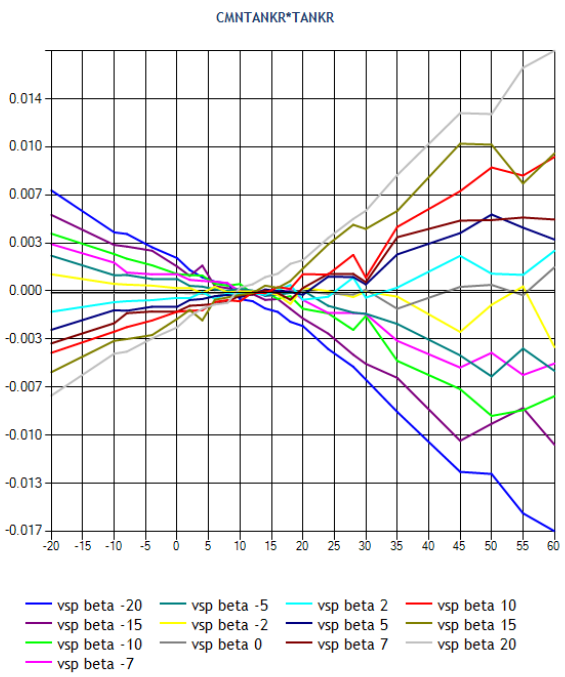
YAWING MOMENT INCREMENT DUE TO RIGHT WING TANK

CMNTANKR (alpha,beta,elevator=-10)



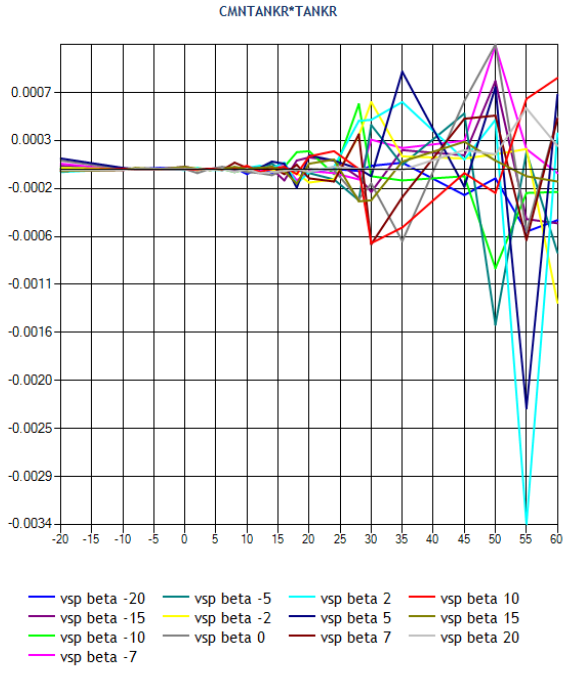
YAWING MOMENT INCREMENT DUE TO RIGHT WING TANK

CMNTANKR (alpha,beta,elevator=-5)



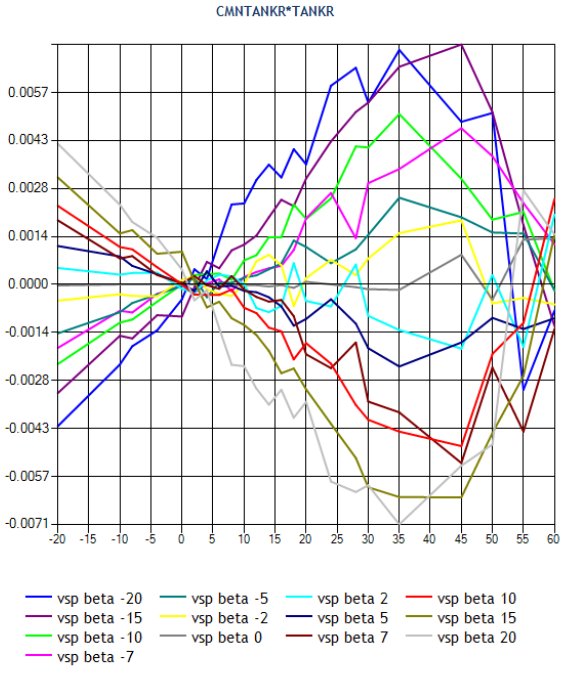
YAWING MOMENT INCREMENT DUE TO RIGHT WING TANK

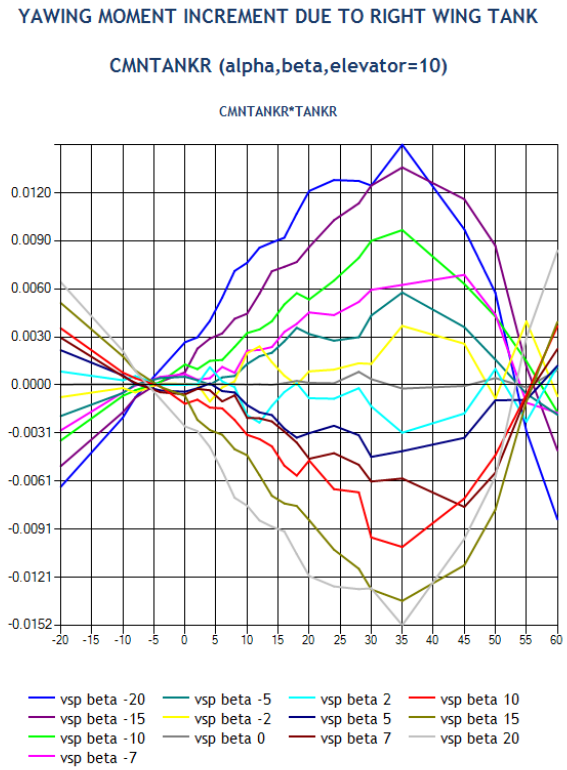
CMNTANKR (alpha,beta,elevator=0)

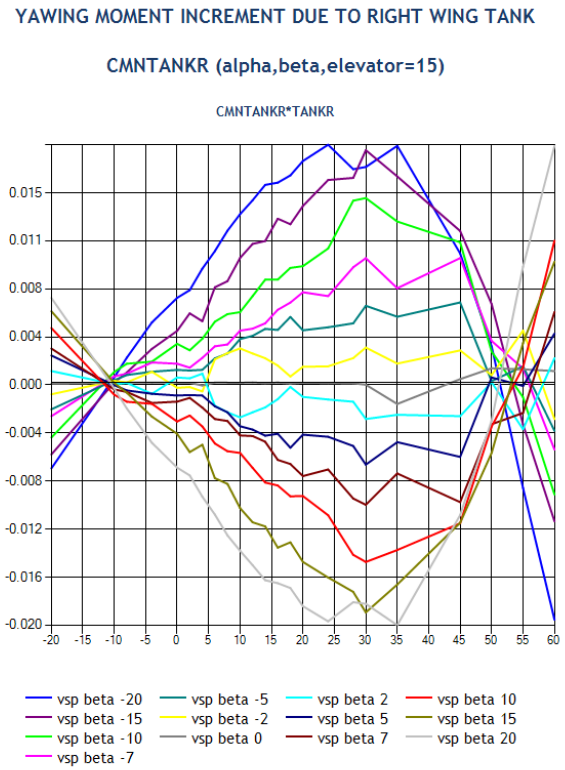


YAWING MOMENT INCREMENT DUE TO RIGHT WING TANK

CMNTANKR (alpha,beta,elevator=5)







References

1. Richard Harrison, rjh@zaretto.com: SEPECAT Jaguar Aerodynamic data built from vspaero; CG (8.0247, 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
2. 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	8.02	0.00	-0.01	M

Element		Unit
Wingspan	8.54	M
Wing Area	24.15	M2
Wing Incidence	1.52	
Chord	3.32	M
Horiz Tail Arm	0.00	
ClMax	1.73	ND

Mass and balance

Element		Unit
Empty Weight	7000.00	KG
IXX	3418.00	
IYY	82395.00	
IZZ	61297.00	

IXZ	-804.00

Element	X	Y	Z	Unit	Weight
pylon-left-over-wing	8.85	-2.08	0.12	M	0 LBS
pylon-left-outboard-wing	9.05	-2.98	-0.23	M	0 LBS
pylon-left-inboard-wing	8.75	-2.08	-0.23	M	0 LBS
pylon-fuselage	8.61	0.00	-0.88	M	0 LBS
pylon-right-inboard-wing	8.75	2.08	-0.23	M	0 LBS
pylon-right-outboard-wing	9.05	2.98	-0.23	M	0 LBS
pylon-right-over-wing	8.85	2.08	0.12	M	0 LBS
internal-gun	5.41	0.00	-0.68	M	0 LBS

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	ExternalRightWingTank [0],ExternalCentreTank [1],ExternalLeftWingTank [2],RightWingTank [3],LeftWingTank [4],FuselageRearTank [5],FuselageCenterTank2 [6],FuselageCenterTank1 [7],FuselageFrontTank [8]
Adour804	12.92	0.41	-0.20	M	ExternalRightWingTank [0],ExternalCentreTank [1],ExternalLeftWingTank [2],RightWingTank [3],LeftWingTank [4],FuselageRearTank [5],FuselageCenterTank2 [6],FuselageCenterTank1 [7],FuselageFrontTank [8]

Tanks

Element	X	Y	Z	Unit	Capacity	Id	Priority	Standpipe

ExternalRightWingTank	8.75	2.08	-0.23	M	2037 LBS	0	1	100 LBS
ExternalCentreTank	8.61	0.00	-0.88	M	2037 LBS	1	2	100 LBS
ExternalLeftWingTank	8.75	-2.08	-0.23	M	2037 LBS	2	1	100 LBS
RightWingTank	9.22	2.09	0.01	M	820 LBS	3	2	40 LBS
LeftWingTank	9.22	-2.09	0.01	M	820 LBS	4	2	40 LBS
FuselageRearTank	11.07	0.00	0.00	M	1962 LBS	5	3	100 LBS
FuselageCenterTank2	8.73	0.00	0.00	M	1146 LBS	6	4	60 LBS
FuselageCenterTank1	7.61	0.00	0.00	M	864 LBS	7	4	40 LBS
FuselageFrontTank	6.08	0.00	0.00	M	1559 LBS	8	3	80 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-norm
fcs/spoiler-left-deg
fcs/spoiler-right-deg

gear/gear-pos-norm
inertia/tank-centre-fitted
inertia/tank-wing-left-fitted
inertia/tank-wing-right-fitted
position/h-agl-m
velocities/mach