

Ruscool Annunciators Config

Version 1.0

User Manual

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Ruscool Annunciators Configuration

Running the **Ruscool Annunciator Config** program allows the user to set up each annunciator output as desired.

The annunciators are split into three categories - Module, Glareshield and MIP

If the Caution and Warning lights are connected, these will be actioned by any corresponding 'Trigger' settings.

The Annunciator LEDs in the Overhead panel and the MIP panel are powered directly from the controller board which is powered by the 5 Volts from the USB cable. It is recommended that the Lamp Test facility is used only for a couple of seconds, because with all annunciators lit up, the current consumed may be close to the limit of the USB port. Older style USB ports are not able to supply high currents, so it is a good idea to use a Powered USB Hub.

The large additional Caution, Warning, and Fire / Extinguisher pushbutton indicators have 12 Volt lamps in them, so they need a separate power supply to enable them to operate. There is a 2 way screw terminal block on the controller board to allow this 12 volt power supply to be connected.

Module Setup

The 'Module' section contains some controller specific settings and initial setup.

The 'Default Annunciator Names' can be used the first time the configuration program is run to automatically enter the standard annunciator names. See <u>'Default Name Setup'</u> for full details

Ruscool Annunciator Config	l.									×
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Module Glareshield	MIP								ELECTRONICS LIMIT	ΕD
- Default Annunciator Nar	mes									
No Action	Clear All OB	350 O B200								
	Lamp Test	All annunciators on be	oth panels with	n be activ	ated				Test Mode	
	Caution	Any annunciators flag	activated/o	leared			Not Connected			
	Warning	Any annunciators flag	e activated/	cleared						
	Category	Description			Offect	Туре	On	Off		
Left Fire	Engines ~	Engine Fire Flag - Eng	gine 1	~	3366-0	Byte ~	1	0		
Right Fire	Engines ~	Engine Fire Flag - Eng	gine 2	~	3366-1	Byte ~	1	0		
							_			
	FS Control Descrip	lion	Event No	Paran	neter					
Left Extinguisher	EXTINGUISH ENGINE F	IRE	66708	1						
Right Extinguisher	EXTINGUISH ENGINE F	IRE	66708	2						

Clicking on 'Test Mode' will allow functionality of the annunciator LEDs to be tested. A button will appear next to the three options which can be clicked to test and clicked a second time to turn them off again.

- Lamp Test will turn all off LEDs. (It is recommended that the Lamp Test facility is used only for a couple of seconds, because with all annunciators lit up, the current consumed may be close to the limit of the USB port.)
- Caution will turn on any connected Master Caution LED buttons
- Warning will turn on any connected Master Warning LED buttons

If Fire and Extinguisher LED pushbuttons are used, these can be connected and setup using FSUIPC Offsets and FS Control events (as shown in the example above).

Default Name Setup

The first time the Ruscool Annunciator Config program is run, all of the annunciator names will be blank (as shown below)

Ruscool Annunciator Con	fig				- 🗆 🗙
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Module Glareshield	MIP			ELECT	RONICS LIMITED

If either a KingAir B350 or B200 is being used, click on the relevant 'Default Annunciator Names' selection and click on Apply.

Ruscool	Annunciator Co	onfig			
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Module	Glareshiel	d MIP			
Defa	ult Annunciator No Action	Names O Clear All	B 350	O B200	Apply

Now when viewing the Glareshield and MIP tabs, the names are automatically entered.

Ruscool Annunciator Con	ıfig						
🛛 🛃 Save 🛛 🕜 Help	Exit					RL	ISCOOL
Module Glareshield	MIP					ELECT	RONICS LIMITED
		L GEN TIE OPEN	HYD FLUID LOW	RVS NOT READY	R GEN TIE OPEN	R DC GEN	
	L CHIP DETECT	L NO FUEL XFR	BAT TIE OPEN		R NO FUEL XFR	R CHIP DETECT	
			ELEC HEAT ON	EXT PWR	R FUEL QTY	R ENG ICE FAIL	
	L BL AIR OFF	AUTOFEATHER OFF			RUD BOOST OFF	R BL AIR OFF	
	L PITOT HEAT			PROP GND SOL		R PITOT HEAT	
	L IGNITION ON	L ENG ANTI-ICE	FUEL CROSSFEED		R ENG ANTI-ICE	R IGNITION ON	
	WING DEICE	L BK DEICE ON	MAN TIES CLOSE		R BK DEICE ON	DAIL DEICE	
	L PROP PITCH	CABIN ALTITUDE	LDG/TAXI LIGHT	PASS OXYGEN ON	AIR COND N1 LO	R PROP PITCH	

These names can be amended, but the standard default names are set.

All of the annunciator default names can be cleared by selecting 'Clear All' and clicking Apply.

Note: if any names have been entered previously, they will be overwritten by applying any default names.

Glareshield Setup

Select the required annunciator button in the top section of the screen. This will show any information related to that annunciator.

If the default names have been filled in, this will appear in the 'Annunciator Name' field - this can be amended or entered as required. The 'Trigger' is automatically selected as WARNING for the Glareshield, but this can be changed if necessary.

The conditional setup is configured so that you can have a combination of conditions grouped together, and there is also an 'or' section that allows you to have one of two separate condition arguments implemented. See the <u>'Glareshield Examples'</u> section for further details

		L ENG FIRE	L ENG FIRE		CABIN DOOR	ALT WARN	R ENG FIRE	
		L FUEL PRESS					R FUEL PRESS	
		L OIL PRESS	L GEN OVHT		VP TRIM FAIL	R GEN OVHT	R OIL PRESS	
		L CHIP DETECT	L BL AIR FAIL		A/P DISC	R BL AIR FAIL	R CHIP DETECT	
'P DISC nnunciator Name:	A/P D	ISC			Trigger (if	applicable) O Caution	ming	
Category	D	escription		Offset	Туре	Calculation	ON when value: On / Min	Max
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d	~		~				⊖ between ⊖ equals	
d	\sim		~			< [O between O equals	
nd	~		~			<	⊖ between ⊖ equals	
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	\sim		~				O between O equals	
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	\sim		~				⊖ between ⊖ equals	

- Click on the "Category" drop-down and choose the item required. If you don't know which category the item is related to, you can choose (All). Selecting CUSTOM will allow you to enter your own offset details.
- Click on the "Description" drop-down and choose the item required. The program will show you the "Offset" as used by FSUIPC.

You will notice that some FSUIPC offsets (ie. the different lights) have a suffix after the offset value, and this is automatically catered for in this system.

Where FSUIPC does a calculation on the data, this is shown in the "Calculation (if any)" column.

It is not necessary to use every output in each bank, so they can just be ignored if they are blank. However, if they have been previously configured and you now want them to be unused, you must select (None) from the Category drop-down.

Make sure either 'Equals' or 'Between' is selected and the relevant values are entered against each offset.

'Equals' option

If the item chosen has an ON / OFF function like the "POP SYNC ON" for instance, then click on the 'equals' button and the appropriate "1" (or relevant value) will pop up in the On/Min box. If this box is not filled in automatically, it is permissible to type in the appropriate information by hand.

You can reverse the function of the 'equals' conditions by changing the "1" to a "0". (The same applies to any other value pairing)

When you choose to use an 'equals' function, the annunciator will go On at the number typed into the box, otherwise it is off.

'Between' option

You can click on the 'between' button and then type values in the On/Min and Max boxes (like for Gear Positions below).

When you choose to use an 'between' function, the annunciator will go On when the value is between the entered values, otherwise it is off.

For instance, it you need to activate the annunciator for the left engine oil pressure failure, you would choose "Between" and use Min set to 0 and set a Max of 40. This means that any oil pressure below 40 will activate the annunciator. (ie Between 0 and 40)

In a similar manner, if you wanted to activate an annunciator for low voltage from the Generator / Alternator, you would use the "Between" function and set Min as 0 and Max as 22. This means any voltage lower than 22 will activate the annunciator.

Because you don't want annunciators to be active when the Battery switch is OFF, you can use this as the first line of most configurations :

LDC GEN HYD FLUID LOW PROP SYNC ON RVS NOT READY R DC GEN DUCT OVERTEMP DUCT OVERTEMP RICE VANE RICE VANE LICE VANE BATTERY CHARGE EXT PWR R ICE VANE LICE VANE BATTERY CHARGE EXT PWR R ICE VANE LICE VANE BATTERY CHARGE EXT PWR R ICE VANE LICE VANE BATTERY CHARGE EXT PWR R ICE VANE LICE VANE EXT BRAKE DEICE ON LDG/TAXI LIGHT PASS OXY ON R ICE VANE EXT LIGNITION ON LBL AIR OFF FUEL CROSSFEED R BL AIR OFF R IGNITION ON SG/TAXI LIGHT Trigger (f applicable) Innunciator Name: LDG/TAXI LIGHT Warning Category Description Offset Type Calculation ON when value: On F Controls Battery Switch 3102 Byte Ibetween Implicable 1 v/ Controls Gear Position (Nose) OBEC Int32 Implicable 1	
Autoreaties Duct overtemp LICE VANE BATTERY CHARGE ELEC TRIM OFF AIR COND N1 LOW RAUTOREATHER ELEC TRIM OFF AIR COND N1 LOW R AUTOREATHER LICE VANE EXT BRAKE DEICE ON LIGUTAXI LIGHT PASS OXY ON RIGE VANE EXT R IGNITION ON LIGUTAXI LIGHT FUEL CROSSFEED RIGUTAXI LIGHT IGNITION ON Category Description Offset Type Calculation ON when value: On OBEC Indite - 3102 Byte Indite - Obetween Indition (Nose) OBEC Indite - Indite -	
LICE VANE BATTERY CHARGE EXT PWR RICE VANE LAUTOFEATHER ELEC TRIM OFF AIR COND N1 LOW RAUTOFEATHER LICE VANE EXT BRAKE DEICE ON LOG/TAXI LIGHT PASS OXY ON R ICE VANE EXT LIGNITION ON LBLAIR OFF FUEL CROSSFEED R BLAIR OFF R IGNITION ON KG/TAXI LIGHT FUEL CROSSFEED R BLAIR OFF R IGNITION ON KG/TAXI LIGHT Trigger (ff applicable) ON when value: On Category Description Offset Type Calculation ON when value: On Controls Battery Switch 3102 Byte Obetween @ equals 1 d Controls Gear Position (Nose) OBEC Int32 @ between @ equals 1	
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LIGNITION ON LBLAIR OFF FUEL CROSSFEED R BLAIR OFF R IGNITION ON G/TAXI LIGHT Trigger (f applicable) Image: Caution Warning G/TAXI LIGHT Image: Caution ON when value: ON Category Description Offset Type Calculation ON when value: On : : : : : : : : : / Controls * Battery Switch * 3102 Byte * : : / Controls * Gear Position (Nose) * OBEC Int32 * : :	
G/TAXI LIGHT Inunciator Name: LDG/TAXI LIGHT Category Description Category Description Category Description Controls Con	
G/TAXI LIGHT Innunciator Name: LDG/TAXI LIGHT Category Description Offset Type Calculation ON when value: On Controls Battery Switch 3102 Byte OBEC Int32 Description Description OBEC Int32 Description Description OBEC Int32 Description OBEC	
G/TAXI LIGHT Trigger (if applicable) nnunciator Name: LDG/TAXI LIGHT Category Description Offset Type Calculation ON when value: On Controls Battery Switch 3102 Byte OBEC Int32 Obetween Detween equals 1 d Controls Int32 DD00 2 Shot DD00 2 Shot DD00 2 	
Controls • Battery Switch • 3102 Byte • between • equals 1 d Controls Gear Position (Nose) • 0BEC Int32 • between equals 1 d Controls • Lights - Landing • 0DEC between equals 1	Min Max
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of Costait v Lights - Landing v 0000 2 Shot v	16380
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d Cockpit Lights - Taxi ODOC-3 Short Obetween equals 1	
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IF Controls Battery Switch 3102 Byte Equals 1

Glareshield Examples

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Modu	e Glareshield	MIF	0							ELECT	RONICS	LIMITED
			L ENG FIRE	L ENG FIRE	C	ABIN DOOR		ALT WARN	R ENG FIRE			
			L FUEL PRESS						R FUEL PRESS			
			L OIL PRESS	L GEN OVHT	A	P TRIM FAIL		R GEN OVHT	R OIL PRESS			
			L CHIP DETECT	L BL AIR FAIL		A/P DISC		R BL AIR FAIL	R CHIP DETECT			
Ann	N DOOR unciator Name:	CA	BIN DOOR			Trigger (O None	if ap	plicable) Caution				
IF	Category		Description		Offset	Туре		Calculation	ON when	value:	On / Min	Max
	Controls	~	Battery Switch	~	3102	Byte	\sim		O between @	equals	1	
and	Plane	~	Doors Open Flag - Exit 1	~	3367-0	Byte	\sim		⊖ between @	equals	1	
and		~		~			\sim		O between (equals		
and		~		~			~		O between (equals		
OR												
	Plane	\sim	Doors Open Flag - Exit 2	~	3367-1	Byte	\sim		⊖ between (equals	1	
and	Plane	~	Doors Open Flag - Exit 3	~	3367-2	Byte	\sim		⊖ between @	equals	1	
and	Plane	\sim	Doors Open Flag - Exit 4	~	3367-3	Byte	\sim		⊖ between @	equals	1	
and		\sim		~			\sim		O between (equals		

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Modu	le Glareshield	MIF	2							ELECT	RONICS	LIMITED
			L ENG FIRE	L ENG FIRE)	CABIN DOOR		ALT WARN	R ENG FIRE			
			L FUEL PRESS						R FUEL PRESS]		
			L OIL PRESS	L GEN OVHT	/	A∕P TRIM FAIL		R GEN OVHT	R OIL PRESS			
			L CHIP DETECT	L BL AIR FAIL		A/P DISC		R BL AIR FAIL	R CHIP DETECT			
Anr	L PRESS Junciator Name	LO	IL PRESS			Trigger (if	ap	licable)) Caution				
IF	Category		Description		Offset	Туре		Calculation	ON when	value:	On / Min	Max
	Controls	~	Battery Switch	~	3102	Byte	~		⊖ between	equals	1	
and	Engines	~	Engine 1 Oil Pressure	• ~	08BA	Short	~	*55/16384	between) equals	0	40
and		~		~			~		O between	equals		
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You can read this setup as "If the Battery Switch is ON, and Engine 1 Oil Pressure is below 40, turn on the annunciator.

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Modul	e Glareshield	MIP						EL	ECTR	ONICS	LIMITED
			L ENG FIRE	INVERTER		CABIN DOOR	ALT WARN	R ENG FIRE			
			L FUEL PRESS					R FUEL PRESS			
			L OIL PRESS	L GEN OVHT		√P TRIM FAIL	R GEN OVHT	R OIL PRESS			
			L CHIP DETECT	L BL AIR FAIL		A/P DISC	R BL AIR FAIL	R CHIP DETECT			
Ann	unciator Name:	L EN	G FIRE			Trigger (if a	pplicable)	7			
IE	Category	C	escription		Offset	Туре	Calculation	ON when valu	le:	On / Min	Max
	Controls	• E	Battery Switch	-	3102	Byte -		🔘 between 🖲 ec	quals	1	
and	Engines	• E	Engine Fire Flag - Engine 1	•	3366-0	Byte -		🔘 between 🖲 ec	uals	1	
and		•		•		-		◯ between ◯ ec	uals		
and		-		-		-]	🔘 🔿 between 🔿 ec	quals		
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odule	Giareshield	MIP								CIRONICS	LIMI
				INVERTER		CABIN DOOR					
			L OIL PRESS	L GEN OVHT		VP TRIM FAIL	_	R GEN OVHT	R OIL PRESS		
			L CHIP DETECT	L BL AIR FAIL		A/P DISC	_	R BL AIR FAIL	R CHIP DETECT		
. FUE Annu	L PRESS nciator Name:	L FUE	EL PRESS			Trigger	(if ap	oplicable) Caution			
(IF	Category	D	escription		Offset	Туре		Calculation	ON when value	On / Min	Max
	Controls	▼ B	attery Switch	-	3102	Byte	•		🔘 between 🖲 equa	ils 1	
and	Engines	▼ E	ngine 1 Fuel Pressure	•	08F8	Int32	•	/144	💿 between 🔘 equa	ils 0	10
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			L ENG FIRE	INVERTER		CABIN DOOR	ALT WARN	R ENG FIRE			
			L FUEL PRESS					R FUEL PRESS			
			L OIL PRESS	L GEN OVHT		A∕P TRIM FAIL	R GEN OVHT	R OIL PRESS			
			L CHIP DETECT	L BL AIR FAIL		A/P DISC	R BL AIR FAIL	R CHIP DETECT			
L BL Ann	AIR FAIL unciator Name:	LB	L AIR FAIL			Trigger (if ap	oplicable) Caution Warning				
IF	Category		Description		Offset	Туре	Calculation	ON when	alue:	On / Min	Max
	Controls	•	Battery Switch	•	3102	Byte 💌		🔘 between 🧕	equals	1	
and	Engines	•	Turbine Engine 1 Bleed Ai	r PSI 🔹	206C	Double -		ø between C	equals	0	40
and		•				•		🔘 between 🛇	equals		
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MIP Setup

Select the required annunciator button in the top section of the screen. This will show any information related to that annunciator.

If the default names have been filled in, this will appear in the 'Annunciator Name' field and the 'Trigger' will be selected accordingly - this can be amended or entered as required. The 'Trigger' can be selected as None, Caution or Warning (normally the MIP annunciators are either None or Caution).

The conditional setup is configured so that you can have a combination of conditions grouped together, and there is also an 'or' section that allows you to have one of two separate condition arguments implemented. See the <u>'MIP Examples'</u> section for further details

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Module Glareshield	MIP					ELECT	RONICS LIMITED
	L DC GEN	L GEN TIE OPEN	HYD FLUID LOW	RVS NOT READY	R GEN TIE OPEN	R DC GEN	
	L CHIP DETECT	L NO FUEL XFR	BAT TIE OPEN		R NO FUEL XFR	R CHIP DETECT	
			ELEC HEAT ON	EXT PWR	R FUEL QTY	R ENG ICE FAIL	
	L BL AIR OFF	AUTOFEATHER OFF		OXY NOT ARMED	RUD BOOST OFF	R BL AIR OFF	
	L PITOT HEAT			PROP GND SOL		R PITOT HEAT	
	L IGNITION ON	L ENG ANTI-ICE	FUEL CROSSFEED		R ENG ANTI-ICE	R IGNITION ON	
	WING DEICE	L BK DEICE ON	MAN TIES CLOSE		R BK DEICE ON	DAIL DEICE	
	L PROP PITCH	CABIN ALTITUDE	LDG/TAXI LIGHT	PASS OXYGEN ON	AIR COND N1 LO	R PROP PITCH	
L DC GEN Annunciator Name:	L DC GEN		I	rigger (if applicable)	0.00		
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MIP Examples

Rusc	ool Annunciator Con	fig										□ ×
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Modu	le Glareshield	M	P							ELECT	RONICS	LIMITED
				HYD FLUID LOW	PR	OP SYNC ON	RVS N	IOT READY		R DC GEN		
							DUCT	OVERTEMP				
					BAT			TPWR		R ICE VANE		
		L	AUTOFEATHER		EL	EC TRIM OFF	AIR CO	ND N1 LOW		RAUTOFEATHER		
			LICE VANE EXT	BRAKE DEICE ON	LDO	G/TAXI LIGHT	PAS	SOXYON		R ICE VANE EXT		
			LIGNITION ON	L BL AIR OFF			FUEL	CROSSFEED	R BL AIR OFF	R IGNITION ON		
						LDCGEN						
Ann	unciator Name:	LC	OC GEN				Trigger (if a	pplicable)	O Warning			
IE	Category		Description			Offset	Туре	Calculatio	on	ON when value:	On / Min	Max
	Controls	~	Battery Switch		~	3102	Byte ~			🔿 between 🖲 equals	1]
and	Cockpit	~	Engine 1 Gener	al Generator Switch	~	3B78	Int32 ~			⊖ between	1]
and	Cockpit	~	Generator Alter	nator 1 Bus Voltage	~	2880	Double ~			● between 〇 equals	0	22
and		~			~					⊖ between ⊖ equals		
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Modu	le Glareshield	MIP								ELEC	TRONICS	LIMITED
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						DUCT	OVERTEMP]	
		L ICE VANE		BATT	ERY CHARGE	E	TPWR		RIC	E VANE]	
		L AUTOFEATH	ER	ELE	C TRIM OFF	AIR CO	ND N1 LOW		RAUT	DFEATHER	Ì	
		L ICE VANE E	KT BRAKE DE		S/TAXI LIGHT	PAS	SOXYON		RICE	VANE EXT	J	
		LIGNITION	DN L BL AIR	OFF		FUEL	CROSSFEED	R BL AIR OFF	RIGN	ITION ON		
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R IG Ann	NITION ON unciator Name:	R IGNITION	ON			Trigger (if a	pplicable)	. w. ·				
	Catagon	Deserie	tion		Offeet	None	Calculation	UVarning	ONIwhee	walway		Max
IF	Calegory	Descrip	Juon		Uliset	туре	Calculatio	on	ON when	value.	On / Min	Max
	Controls	 Battery S 	witch	•	3102	Byte -			between	equals	1	
and	Engines	Engine 2	Starter Switch Pos	ition 🔹	092A	Short -			between	equals	1	
and		•		•		•			between	equals		
and		*		Ŧ		-][🔘 between	equals		
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Because there is a light in the nose gear of many King Air aircraft, it is useful to have a warning annunciator to tell you that the Landing or Taxi light is still ON when the landing gear is retracted.

The example above effectively says :

If the Battery Switch is ON, and the landing gear in anywhere in the retracting / retracted state (ie between 1 and 16380) and the Landing Lights or Taxi Lights are ON, then activate the LDG/TAXI LIGHT annunciator.

Note : Gear down and locked has a value of 16383

Main Annunciator Program

The main 'Ruscool Annunciators' program will start minimised and wait for the Flight Simulator software to start, so it can be running prior to the simulator being started.

If necessary, the program can be maximised and will show the annunciators that are triggered.

Ruscoo	ol Annunciato									
lelp →									RU	SCOC
	Caution L ENG FIRE L FUEL PRESS L OIL PRESS L CHIP DETECT		Warning L Eng Fil		L ng Fire	L R Fire Eng Fire		L Extinguisher	R Extinguis	her
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			L GEN OVHT		A/P TRI	M FAIL	R GEN OVHT		R OIL PRESS	
					A/P DISC		R BL AIR FAIL		R CHIP DETEC	π
LD	DC GEN HYD F		LUID LOW PROP		OP SYNC ON RV		NOT READY			R DC GEN
	L ICE VANE					DUCTOVE	RTEMP			
LIC				BATTER	Y CHARGE	EXT P	WR			R ICE VANE
LAUT	L AUTOFEATHER			ELEC TRIM OFF		AIR COND N1 LOW				R AUTOFEATHER
LICE	L ICE VANE EXT BRAK		E DEICE ON LD		AXI LIGHT	PASS OX	XYON			R ICE VANE EXT
LIGN	ITION ON	LB	L AIR OFF			FUEL CRO	SSFEED	R BL AI	ROFF	R IGNITION ON
				LC	OC GEN					

When closing Flight Simulator, the following message will appear allowing the 'Ruscool Annunciator' program to close smoothly.

