Target Generation Facility
(TGF)
Simulation Pilot Operations Guide
Fourth Edition

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1.1 Functions of the Pilot Station.

The Simulation Pilot Work Station (SPWS) provides the functions necessary for a Simulation Pilot (SP) to issue commands, and monitor the status of aircraft they control (fly/pilot) – often several aircraft during a simulation. Each SPWS represents a particular sector and frequency; a geographical region of space, and contains several separate processes to assist a SP in piloting assigned aircraft.

Common types of commands SP's issue/monitor can be categorized into four types:

- **Vectoring** - Changing an aircrafts heading, altitude or airspeed.
- **Scheduling** - Reassigning an aircrafts flight path, or establishing an aircraft on a non-radar route.
- **Data-Link** - Automated commands transmitted electronically from the Air Traffic Control computer system which the SP may accept/reject.
- **Unique** - Commands such as a missed approach, frequency change, squawk, and runway change.

The SPWS can be broken into six defining processes:

- **The Instrument Panel** - Presents aircraft data required to monitor the status and progress of all aircraft under SP control. It contains the aircraft call sign, the actual/commanded magnetic heading, the actual/commanded altitude, the actual/commanded airspeed, the actual Mach number, the status, the runway and the speed brake setting.
- **The Aircraft Info Panel –** Displays information on a selected flight and contains an area for the SP to input commands to control that aircraft.
- **The Commands Entered Panel -** Displays all commands that the SP has entered, or input by the data link, regardless of the validity.
- **The Pilot Message Panel -** Displays any error-messages/warnings from OS errors, or TGF errors when an invalid/improper command has been entered.
- **The Function Key (Macros) Panel -** Contains pre-made commands which can be entered into the Command Input Area with one key stroke.
- **The Radar Display -** Gives the overall situational awareness of the airspace the SPWS has been allocated- it is a birds-eye view of the local airspace. The position of aircraft allocated to the SPWS will be found here, as will geographical symbols similar to an Air Traffic Controller's radar panel

The next section describes a more in depth look at the 6 processes of the SPWS.

2.0 Pilot Station Terminal Panel

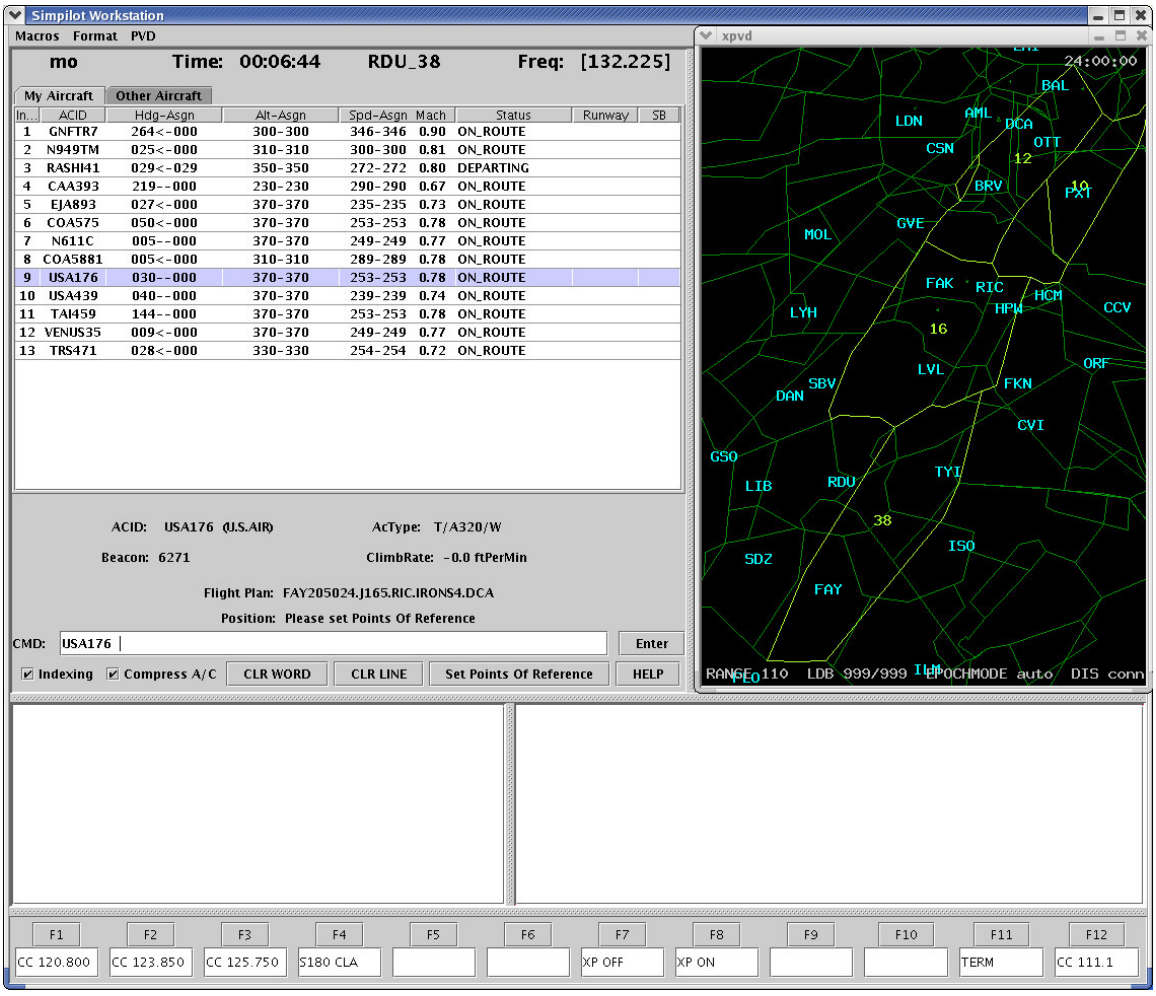
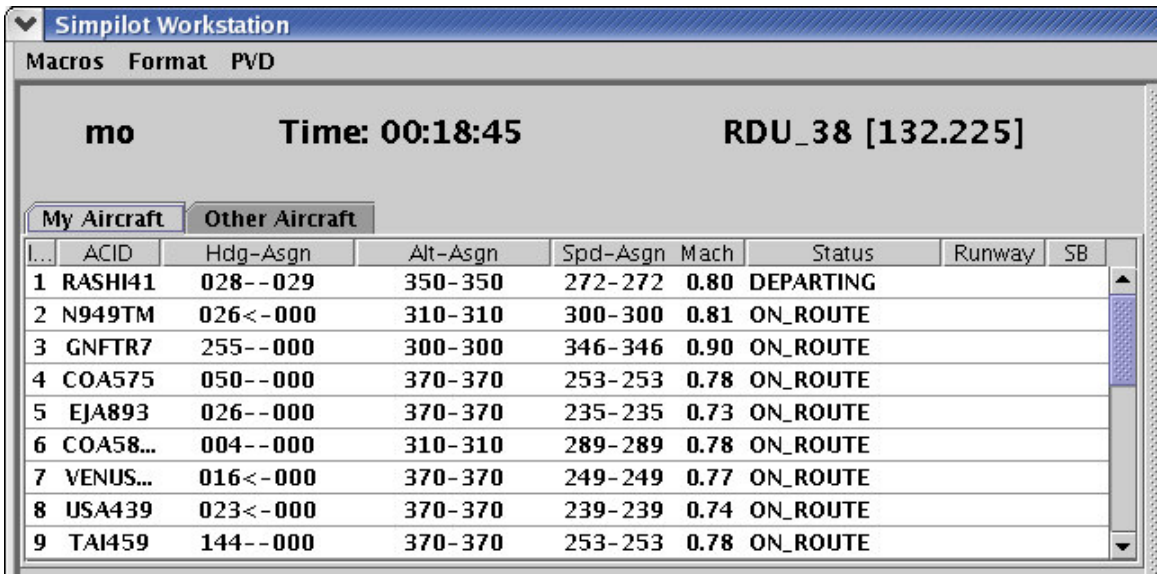


Figure 1 Pilot Station

2.1 The Instrument Panel



I...	ACID	Hdg-Asgn	Alt-Asgn	Spd-Asgn	Mach	Status	Runway	SB
1	RASHI41	028--029	350-350	272-272	0.80	DEPARTING		
2	N949TM	026<-000	310-310	300-300	0.81	ON_ROUTE		
3	GNFTR7	255--000	300-300	346-346	0.90	ON_ROUTE		
4	COA575	050--000	370-370	253-253	0.78	ON_ROUTE		
5	EJA893	026--000	370-370	235-235	0.73	ON_ROUTE		
6	COA58...	004--000	310-310	289-289	0.78	ON_ROUTE		
7	VENUS...	016<-000	370-370	249-249	0.77	ON_ROUTE		
8	USA439	023<-000	370-370	239-239	0.74	ON_ROUTE		
9	TAI459	144--000	370-370	253-253	0.78	ON_ROUTE		

Figure 2 Pilot Station Instrument Panel

This panel presents aircraft data required to monitor the status and progress of all aircraft under the SP control.

The top menu bar contains the following drop down boxes:

- Macros – to load or save.
- Format – to change font.
- PVD – displays the drop down choices for the radar display. See the section **2.6 The Radar Display Panel (PVD)** for an in depth description of these options.

The area directly below the menu bar displays data unique to the SPWS. In order from left to right:

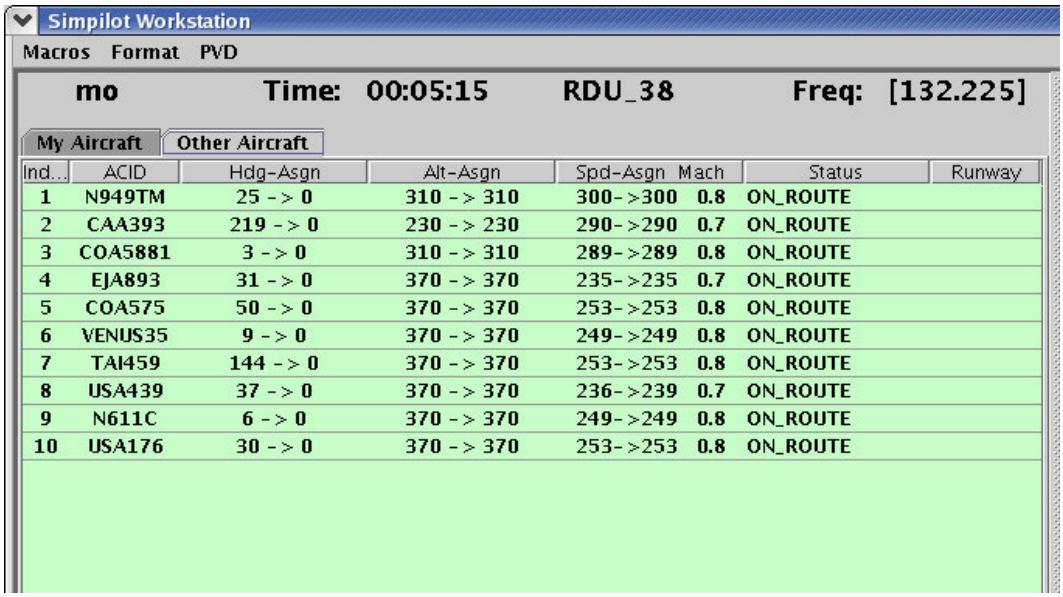
- The SPWS name.
- The elapsed simulation time.
- The sector name.
- The frequency the SPWS is simulating.

Below this area lies the list of aircraft. There are two tabbed selections. When the left tab, (My Aircraft) is selected, the GUI shows aircraft assigned to this SPWS.

The data displayed in order from left to right:

- Aircraft Index number.
- Aircraft identification. (ACID - Call Sign)
- Actual magnetic heading – Assigned magnetic heading.
- Actual altitude (hundreds of feet) – Assigned actual altitude.
- Actual indicated airspeed (knots) – Assigned airspeed - Actual Mach speed.
- Status – Displays the status of an aircraft. It will indicate the following:
    1. **GATE_HOLD** - held at gate; FlightActivatedEvent not granted immediately
    2. **DEPARTING** - departing, after a FlightActivatedEvent and before an AtManeuverAltitudeEvent
    3. **ON_ROUTE** - enroute aircraft initial state; aircraft is following its flight plan or returning to its flight plan holding aircraft after HoldEndEvent
    4. **ON_VECTORS** - aircraft is not on route, and not meeting another state
    5. **HOLD** - aircraft after HoldStartEvent from starting hold pattern
    6. **ILS_BEF_FINL** - on ILS and on the localizer (received OnLocalizerEvent)
    7. **NONILS_BEF_F** - not on ILS and on the localizer (recvd OnLocalizerEvent)
    8. **ILS_FINAL** - on ILS final approach (received PassedOuterMarkerEvent)
    9. **NONILS_FINAL**- not on ILS, on final approach(got PassedOuterMarkerEvent)
    10. **PAST_THRESH** - crossed runway threshold (got CrossedRwyThresholdEvent)
    11. **MISSED_APPR** - aborting approach (received MissedApproachEvent)
    12. **LANDED** - touched down, received TouchdownEvent
    13. **TERMINATED** - terminated, received FlightTerminatedEvent
- Runway - The aircraft's arrival runway
- SB – if speed brakes are on

When the right tab, (Other Aircraft) is selected, all of the other aircraft in that sector which are not assigned to this SPWS are displayed with a light green background.



Ind...	ACID	Hdg-Asgn	Alt-Asgn	Spd-Asgn	Mach	Status	Runway
1	N949TM	25 -> 0	310 -> 310	300->300	0.8	ON_ROUTE	
2	CAA393	219 -> 0	230 -> 230	290->290	0.7	ON_ROUTE	
3	COA5881	3 -> 0	310 -> 310	289->289	0.8	ON_ROUTE	
4	EJA893	31 -> 0	370 -> 370	235->235	0.7	ON_ROUTE	
5	COA575	50 -> 0	370 -> 370	253->253	0.8	ON_ROUTE	
6	VENUS35	9 -> 0	370 -> 370	249->249	0.8	ON_ROUTE	
7	TAI459	144 -> 0	370 -> 370	253->253	0.8	ON_ROUTE	
8	USA439	37 -> 0	370 -> 370	236->239	0.7	ON_ROUTE	
9	N611C	6 -> 0	370 -> 370	249->249	0.8	ON_ROUTE	
10	USA176	30 -> 0	370 -> 370	253->253	0.8	ON_ROUTE	

Figure 3 Other Aircraft

2.2 The Aircraft Info Panel

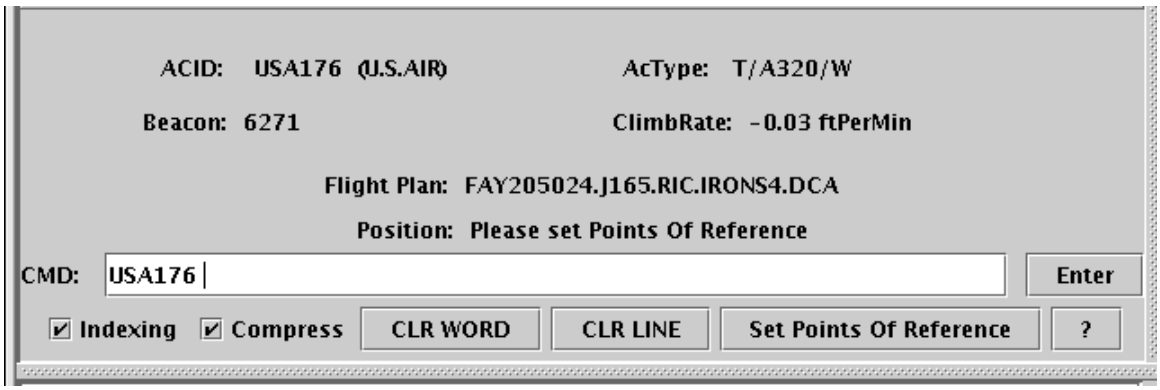


Figure 4 Pilot Station Aircraft Info Panel

The Aircraft Info Panel displays information about a selected flight:

Acid – name of airline
Aircraft Type
Landing Equipment
Beacon
Climb Rate
Flight Plan
Position relative to Points of Reference

CMD: - The Command Input area is where commands are placed by one of the following methods:

- Choose an aircraft from the list (through arrow keys, indexing, or non-indexing means) and then *depress the space bar*.
- Enter the proper command by using:
  - Keyboard Entry: Type the command with the standard keyboard/keypad.
  - Function Keys: Use the pre-programmed Function Keys to display a command string. See section **2.5 Function Key (Macros) Panel.**

Press the enter key or enter button to send the command.

Indexing:

When 'Indexing' is activated a SP is able to access aircraft by pressing an aircraft index number followed by pressing the spacebar. The number entered will be replaced by the aircraft that matches the entered index.

When 'Indexing' is not activated the SP can select an Aircraft in one of two ways:

- By entering the last digits in the ACID (any number of characters from the end of the ACID may be used). The first aircraft to match the string within the status display is selected. If multiple aircraft have the same suffix more characters can be used to differentiate between similar entities.
- By reduced aircraft method. Type the first character of the aircraft call-sign followed by the last three.

Examples of non-indexing means of selecting an aircraft:

Aircraft	**Selection Means**
AAL305	AAL305 (Complete ACID entered)
	305 (Last digits of ACID entered)
	5 (Last digit of the ACID entered, this is not the index of the plane in the list.)
	A305 (Reduced aircraft method.)

The complete ACID is accessed *after the user presses the spacebar*. After the spacebar is pressed, and the aircraft is found, the status display line containing the ACID will turn blue. If an aircraft is not highlighted then the aircraft was not found.

Compress A/C,

- *Compress A/C*- Removes spaces within the aircraft list: all aircraft below a space are moved up to fill empty spaces. (As aircraft are allocated to a SPWS they take the first available space found in the list, if the compress is used, the presence of empty spaces is diminished, making sure that new aircraft allocated to the SP will appear in the lower area of the Pilot Station Instrument Panel.)

Clear Word, Clear Line

- *CLR WORD*- erases the last word typed on the command line.
- *CLR LINE* erases the entire line.

Sets Points of Reference

Here you may add or delete the names of fixes that you would like to use as points of reference for your aircraft. It will be used to display the position in the Aircraft Info Panel, as a measurement of how far from fix and in what direction.

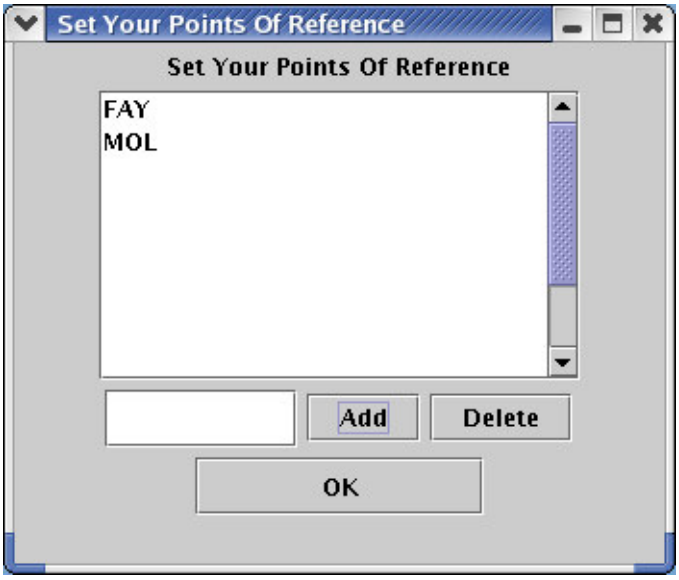


Figure 5 Sets Points of Reference

HELP

This button display pop up windows which can be moved to any location on the screen. It contains a list of SimPilot commands, their use, and their proper syntax.

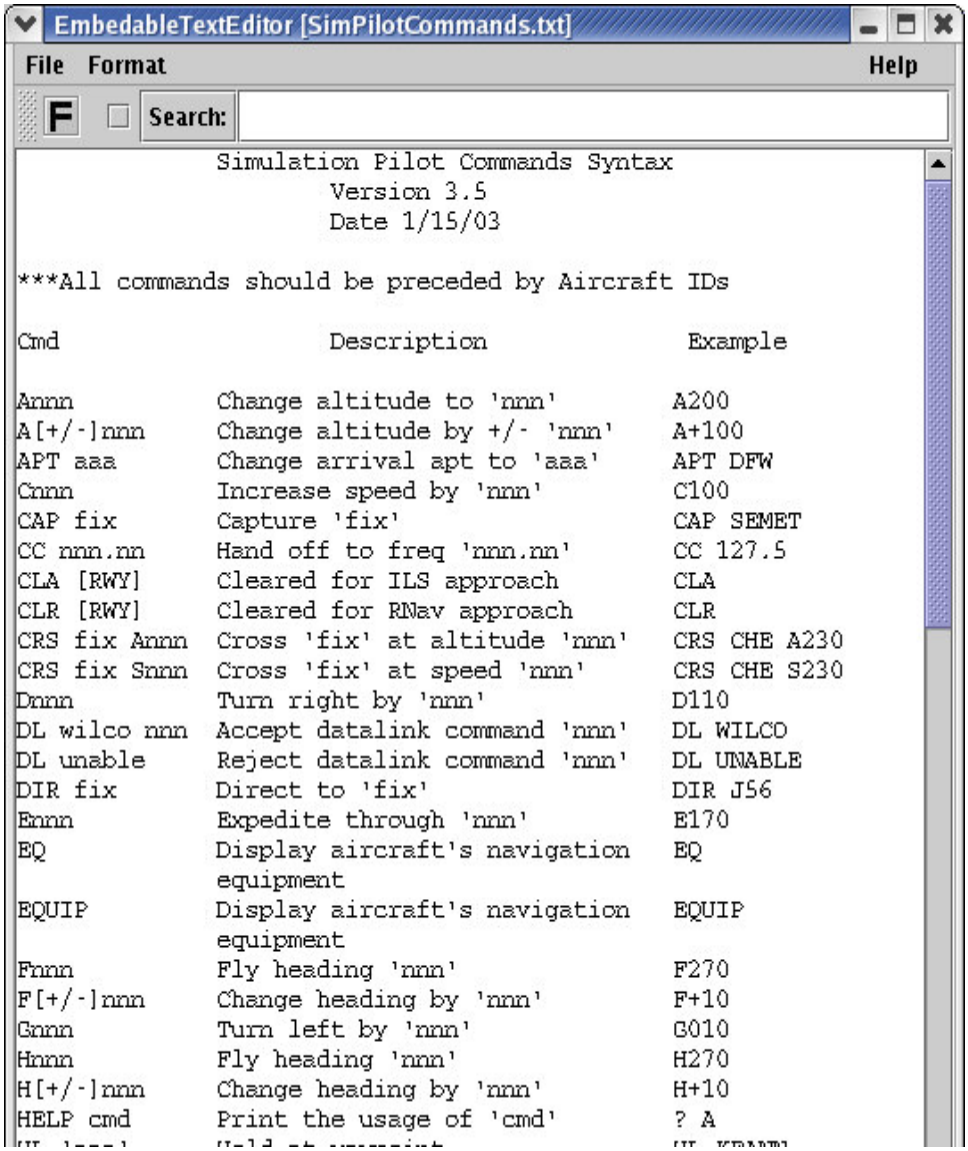
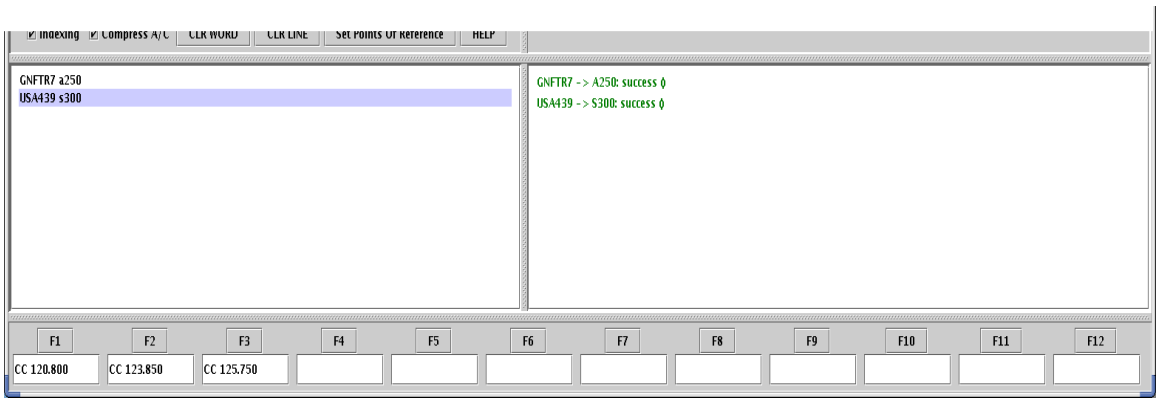


Figure 6 Pilot Station Command Help Panel

2.3 Commands Entered Panel



The Commands Entered window appears next on the left side of the SimPilot Workstation GUI. It will show all commands typed by the SP or input by the data link, regardless of the validity of the command.

Figure 7 Commands Entered Panel

Note that left-clicking on a command will cause the entire line to reappear in the Command Input Panel.

2.4 Pilot Messages Panel

The Pilot Station Message Panel appears on the right side of the GUI. It will display prompts, input errors and warnings. Left-clicking on the message causes it to disappear.

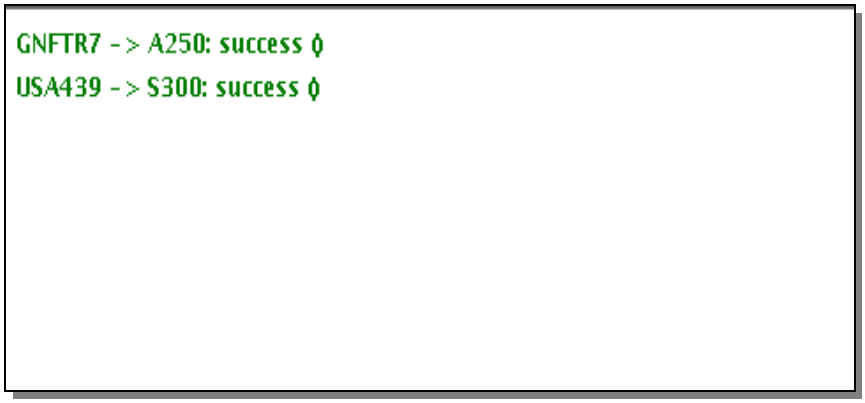


Figure 8 Pilot Messages Panel

There are different types of messages displayed (each color coded):

- **Valid Input Commands** – These messages are displayed in green.
- **Invalid Input Commands** – These messages are displayed in red.
- **Local Error Messages** - indicate a typographical or other error on input. These messages normally refer to the Sim-Pilot, although some might require interaction between the Sim-Pilot and controller. It is left to the discretion of the Sim-Pilot to make this determination. These messages are also displayed in red.
- **Prompt/Help Messages** – messages requiring interaction between the controller and Sim-Pilot. For example, an aircraft was given a crossing restriction which can't be accomplished; the Sim-Pilot should so inform the controller. These messages are displayed in blue.

2.5 Function Key (Macros) Panel

This portion of the Simpilot Workstation GUI allows SimPilots to map command strings to function keys F1 through F12 for quick use.

Figure 9 Pilot Station Command Macros Panel

To load saved macros, choose Macros from SimPilot Workstation Menu bar, (or right click).

Figure 10 Pilot Station Macro Menu

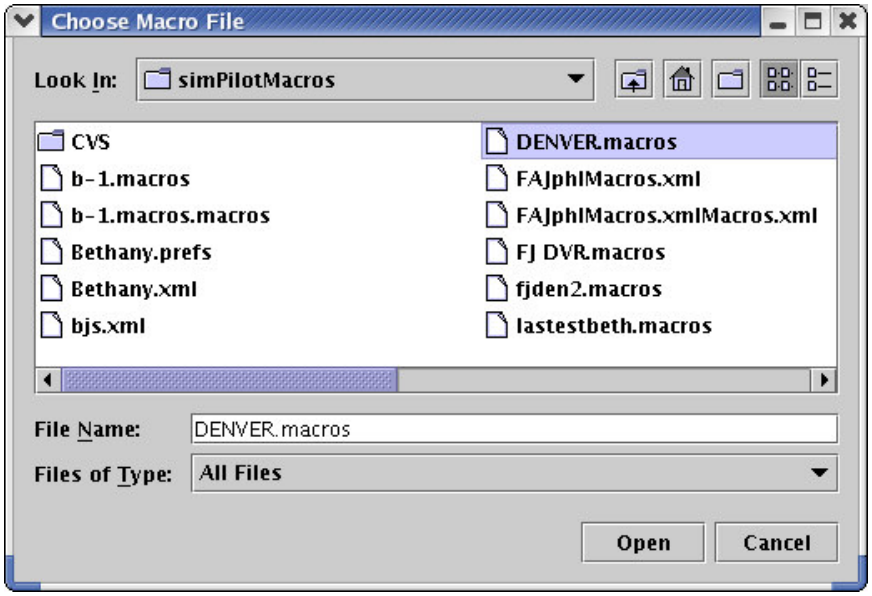


Figure 11 Choose Sim Pilot Macros

Any modifications made to the function key macros must be saved if they wish to load them later. All files are stored as ".macros" files in the /tgf/xml/simPilotMacros folder. Whenever a SP is allocated the Macros are defaulted to empty values.

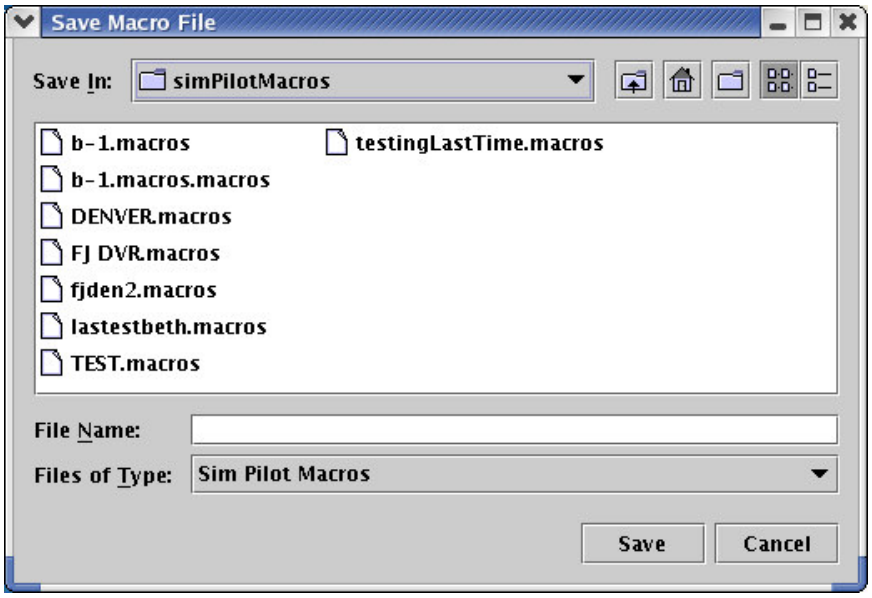


Figure 12 Save Sim Pilot Macros

2.6 The Radar Display Panel (PVD)

This window provides the SimPilot with a situational awareness of the airspace within which aircraft they control are operating. It a geographical view of aircraft positions within a region and is similar to a radar scope used by controllers.

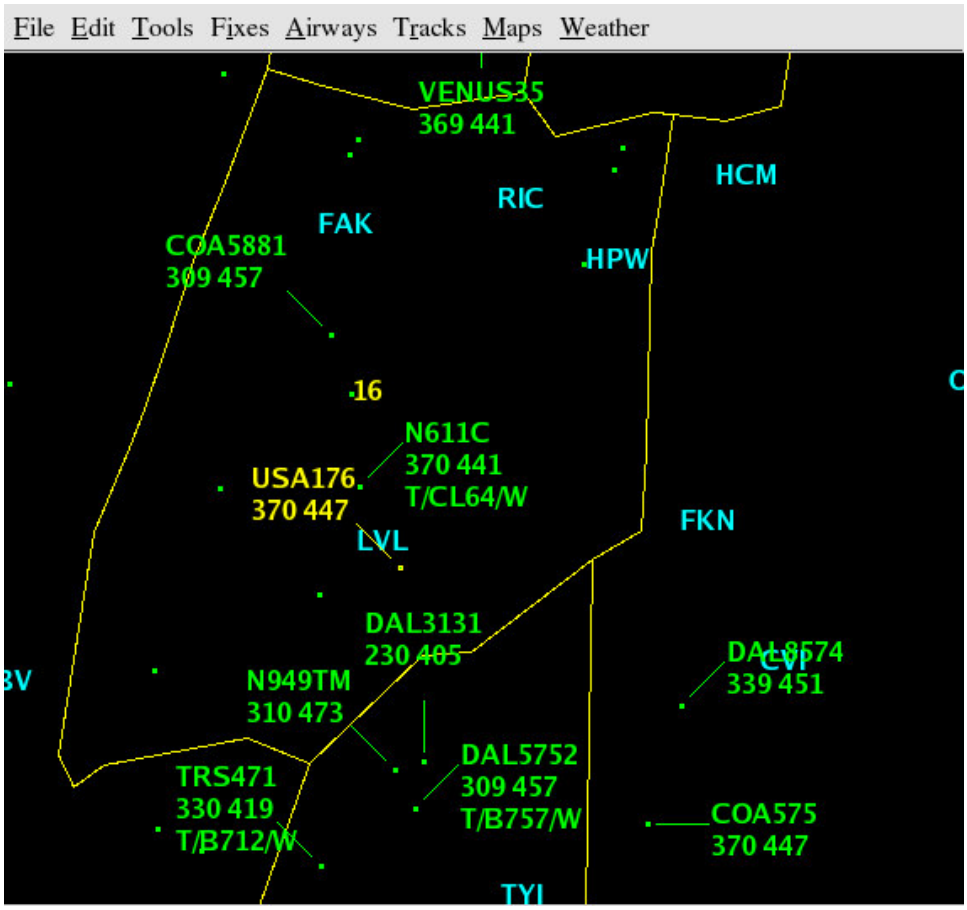


Figure 13 Pilot Station Radar Panel

The commands that control the PVD are selected from the SimPilot Workstation's menu bar. The way that information on the map and aircraft displayed may be changed.

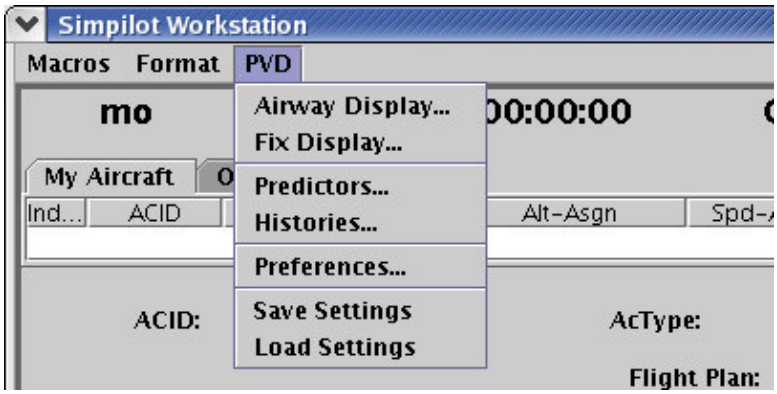


Figure 14 PVD Controls

Figure 15 Airway Display

Figure 16 Fix Display

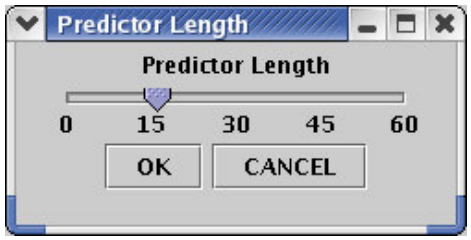


Figure 17 Predictor Length

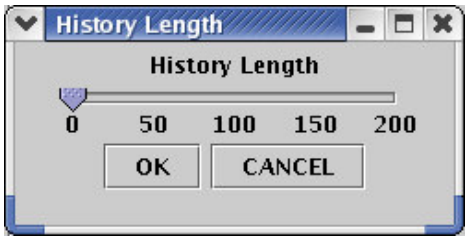


Figure 18 History Length

Figure 19 Aircraft Selection Preferences

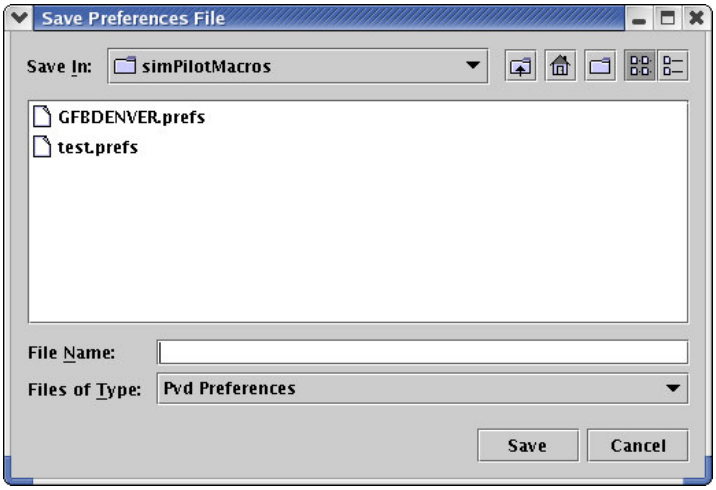


Figure 20 Save Preferences

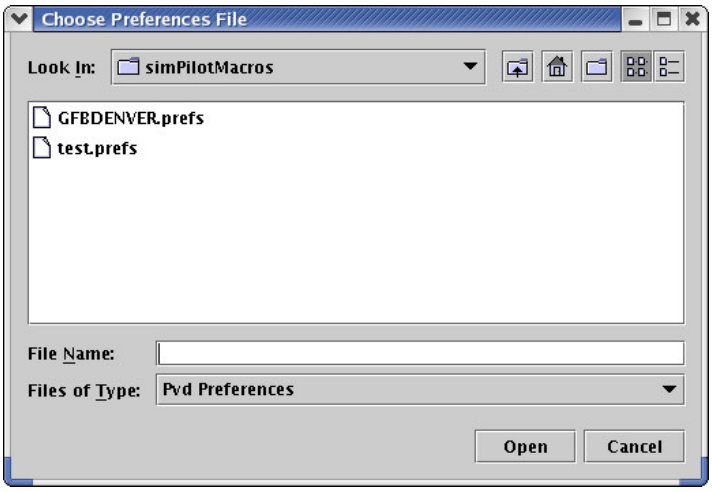


Figure 21 Load Preferences

These settings may be saved or loaded from previously saved as ".prefs" files – also in the /tgf/xml/simPilotMacros folder.

More information on using the PVD can be found in the TGF document titled: ***PVD Documentation for the Target Generation Facility (TGF)*.**

3.0 The Pilot Commands

3.1 Heading Commands

Heading commands change an aircrafts horizontal travel direction.

These commands are described below with examples of controller phraseology and the commands entered in response.

3.1.1 Fly Heading Commands

F or H Command

Turn an aircraft to the assigned heading when the turn direction is not a factor. The aircraft will turn in the direction closest to the assigned heading; traveling the shortest distance.

Command Syntax	
F### H###	Fly heading ###. *###* is a heading between and including 000 to 360 degrees.
F[+/-]### H[+/-]###	Change heading by ### degrees

Example Controller Phraseology	Example Command Response
"Fly Heading Two Seven Zero"	UAL163 F270 UAL163 H270

3.1.2 Turn Right Command

R, R[+/-], and D Commands

Turn an aircraft right to a heading 0 through 360 degrees or
Turn an aircraft to a new heading by nnn degrees.

Command Syntax	
R###	Turn right to ###. ### is a Heading of 000 through 360 degrees.
R[+/-]### D###	Turn right by ###. ### is a Heading from 000 through 360 degrees.

Example Controller Phraseology	Example Command Response
"Turn Right Heading Two Seven Zero"	UAL163 R270
"Turn Right Three Seven Degrees"	UAL163 R+37 or UAL163 D37
"Turn Three Hundred Forty Degrees Right"	UAL163 R-20 or UAL163 D340 (this will cause the aircraft to make a 'long' right turn to end up 20 degrees left of it's previous heading.)
"Turn Right Three Hundred Sixty Degrees."	UAL163 R+360 or UAL163 D360

3.1.3 Turn Left Command

L, L[+/-], and G Commands

Turn an aircraft left to a heading between 0 and 360 degrees or turn an aircraft by ### degrees.

Command Syntax	
L###	Turn Left to ###. ### is a Heading of 000 through 360 degrees.
L[+/-]###	Turn left by ### degrees. ### is a Heading from 000 through 360 degrees.
G###	

Example Controller Phraseology	Example Command Response
"Turn Left Heading Two Seven Zero"	UAL163 L270
"Turn Left Twenty Degrees"	UAL163 L-20 or UAL163 G20
"Turn Three Hundred Forty Degrees Left, I repeat left turn Three Hundred Forty degrees."	UAL163 L+20 or UAL163 G340 (this will cause the aircraft to make a 'long' left turn to end up 20 degrees right of it's previous heading.)
"Turn Left Three Hundred Sixty Degrees"	UAL163 L-360 or UAL163 G360

3.1.4 Maintain Heading

MT Command

This command turns the aircraft to the given heading and maintains that heading.

Command Syntax	
MT H###	Change an aircraft's heading to ### degrees.
MT RW	Change an aircraft's heading to its arrival runway heading.

Example Controller Phraseology	Example Command Response
"Maintain Heading Two Six Zero".	UAL163 MT H260
"Maintain Runway Heading".	UAL163 MT RW (This command would most likely be used after a Missed Approach.)

Limitations:

- Heading given must be between 0 and 360 degrees.
- If the MT RW is given, the aircraft must have an arrival runway in its Flight Plan.

3.1.5 Maintain Heading until Altitude

MT Command

This command causes an aircraft to maintain a given heading until the given altitude is reached.

Command Syntax	
MT H### Aaaa	Causes an aircraft to maintain a heading of ### until an altitude of aaa is reached.
MT RW Aaaa	Causes an aircraft to maintain its arrival runway heading until an altitude of aaa is reached.

Example Controller Phraseology	Example Command Response
"*Maintain Heading Two Six Zero until Twelve Hundred Feet* then increase speed to 250 knots."	UAL163 MT H260 A12 (The *THEN* command would be used after the A12 segment, but we're only interested in the MT part here.)
"*Maintain Runway Heading until Twelve Hundred Feet* then increase speed to 250 knots."	UAL163 MT RW A12 (This command would most likely be used during a missed approach. The *THEN* command would be used after the A12 segment, but we're only interested in the MT part here.)

Limitations:

- Heading given must be between 0 and 360 degrees.
- Minimum Altitude Allowance = 0 feet MSL.
- Maximum Altitude Allowance = 50,000 feet MSL.
- If the MT RW aaa command is given, the aircraft must have an arrival runway.

3.2 Altitude Commands

Altitude commands change the altitude or descent rate of an aircraft. Commanded altitudes are expressed as hundreds of feet above mean sea-level (MSL). A commanded altitude above 18,000 feet is issued as a 'flight level'.

3.2.1 Change Altitude, Expedite Command

A (Altitude), E (Expedite)

This command either climbs or descends an aircraft regardless of current altitude.
(Note: MSL refers to Mean Sea-Level.)

Command Syntax	
A###	Change the altitude to ### feet MSL. ### is the altitude in hundreds of feet.
A###M	Change the altitude to ### feet MSL. ### is the altitude in hundreds of feet. M indicates the aircraft should climb/descend at a maximum rate based upon the aircrafts equipment.
Exxx	Change the altitude to xxx. xxx is the altitude in hundreds of feet. The aircraft will expedite to reach the commanded altitude.
A### Exxx	Change altitude to ###, expediting through altitude xxx. ### and xxx are altitudes given in hundreds of feet.

Example Controller Phraseology	Example Command Response
"Climb and Maintain One Six Thousand". (Command given below 18,000 MSL.)	UAL163 A160
"Climb and Maintain Flight Level Two Three Zero." (Command given at or above 18,000 MSL.)	UAL163 A230
"Descend and Maintain One Six Thousand." (Command given below 18,000 MSL.)	UAL163 A160
"Descend and Maintain Flight Level Two Three Zero." (Command given above 18,000 MSL.)	UAL163 A230
"Climb and Maintain Flight Level Two Five Zero at Maximum Rate." (Command given at or above 18,000 MSL.)	UAL163 A250M
"Descend and Maintain Two Hundred."	UAL163 A002
"Expedite through altitude One Six Zero."	UAL163 E160
"Climb and maintain flight level Two Three Zero, expedite through One Seven Zero."	UAL163 A230 E170

Limitations:

- Minimum Altitude Allowance = 0 feet MSL.
- Maximum Altitude Allowance = 50,000 feet MSL.

3.3 Speed Commands

The speed commands change the airspeed of an aircraft regardless of it's current speed. The command can be input as either an absolute airspeed or an incremental change.

3.3.1 Change Speed Command

S, S[+/-], and C Command

The S command changes an aircraft's airspeed to a new indicated airspeed (knots). The S[+/-] and C commands increase/decrease the aircrafts speed incrementally without knowledge of the aircraft's current speed.

Command Syntax	
S###	Change an aircraft's indicated airspeed to ### knots. ### is the airspeed in knots.
S[+/-]###	Change an aircraft's indicated airspeed by ### knots. ### is the airspeed in knots.
C###	
S###M	Change an aircraft's indicated airspeed to ### knots. ### is the airspeed in knots. The aircraft should accelerate/ slow at it's maximum rate.
RS	Resume previous speed.

Example Controller Phraseology	Example Command Response
"Increase Speed to Two Six Zero Knots."	UAL163 S260
"Decrease Speed to One Two Zero Knots."	UAL163 S120
"Increase speed by Three Zero Knots."	UAL163 S+30 or UAL163 C30
"Decrease speed by Two Zero Knots."	UAL163 S-20 or UAL163 C-30
"Increase Speed to One Two Zero Knots, accelerate as fast as possible."	UAL163 S120M
"Decrease Speed by Zero Three Zero Knots as fast as possible."	UAL163 C-30M or UAL163 S-30M
"Resume previous speed."	UAL163 RS

Limitations:

- S command limits minimum speed allowance to 0 knots.
- S command limits maximum speed allowance to 900 knots.
- S[+/-] and C commands limits minimum speed change to -200 knots.
- S[+/-] and C commands limits maximum speed change to 200 knots.

3.3.2 Mach Command

M Command

This command changes the Mach speed of an aircraft. The Mach speed change is issued from the controller in the form of a decimal number with a range of greater than zero to less than one (1), or a whole number with the range from greater than 0 to less than 100. In the latter case, the Mach speed will be converted to a decimal value prior to command execution.

Command Syntax	
M###	Change the Mach speed of the aircraft to ###.

Example Controller Phraseology	Example Command Response
"Increase Speed to Mach Point Eight Two."	UAL163 M.82 UAL163 M82
"Increase Speed to Mach Eight Two."	
"Decrease Speed to Mach Point Five Nine."	UAL163 M.59 UAL163 M59
"Decrease Speed to Mach Five Nine."	

3.3.3 Maintain Speed until Outer Marker

MT S Command

This command causes an aircraft to maintain its current airspeed until reaching the outer marker.

Command Syntax	
MT S	Causes an aircraft to maintain its current indicated airspeed until it reaches the outer marker on its ILS.

Example Controller Phraseology	Example Command Response
"Maintain speed until Outer Marker."	UAL163 MT S

Limitations:

- There must be a Localizer/Outer Marker on the aircraft's route.

3.4 ROUTE Commands

Routing commands generate a new route of flight for an aircraft. These commands generally reestablish an aircraft on a non-radar type route, and consist of route intercepts, waypoint captures and ILS approach clearances.

Routing Commands
Clearance for an Approach
Route Intercept
Waypoint Capture

These commands are described below with examples of controller phraseology and the simulation pilot commands entered in response.

3.4.1 Clearance for an Approach

CLA Command

This command establishes an aircraft on a final approach course which proceeds to touchdown, as though a pilot is navigating the aircraft down to a landing on an assigned runway.

This command provides a smooth transition from a vectored mode to an on-route mode as if an aircraft were flying a synthesized route down a final approach course. The aircraft must be pointing towards the final approach course when the command is implemented. The aircraft will gradually start turning onto the final approach course when it penetrates a three degree cone surrounding the final approach course.

Command Syntax	
CLA	Cleared for the approach that is defined by the aircraft's assigned arrival runway.
CLA rwy	Cleared for the approach that is defined by rwy.

Example Controller Phraseology	**Example Command Response**
"Cleared for ILS Approach runway Two Six Left"	UAL163 CLA (*Note: Runway 26L was already defined as the aircrafts arrival runway.*)
	UAL163 CLA 26L (*Note: Runway 26L was not defined as the aircrafts arrival runway.)*

Limitations –

- The aircraft must have an arrival airport.
- If the CLA rwy command is issued, the runway must be present on the aircrafts arrival airport.

3.4.2 Clearance for RNav Approach

CLR Command

This command establishes an aircraft on a final approach course which proceeds to touchdown, as though a pilot is navigating the aircraft down to a landing on an assigned runway.

This command provides a smooth transition from a vectored mode to an on-route mode as if an aircraft were flying a synthesized route down a final approach course. The aircraft must be pointing towards the final approach course when the command is implemented. The aircraft will gradually start turning onto the final approach course when it penetrates a three degree cone surrounding the final approach course.

Command Syntax	
CLR	Cleared for the approach that is defined by the aircraft's assigned arrival runway.
CLR rwy	Cleared for the approach that is defined by rwy.

Example Controller Phraseology	**Example Command Response**
"Cleared for RNav Approach runway Two Six Left"	UAL163 CLR (*Note: Runway 26L was already defined as the aircrafts arrival runway.*)
	UAL163 CLR 26L (*Note: Runway 26L was not defined as the aircrafts arrival runway.)*

Limitations –

- The aircraft must have an arrival airport.
- If the CLR rwy command is issued, the runway must be present on the aircrafts arrival airport.

3.4.3 Route Intercept Command

INT, CAP, DIR, RTE Command.

This command guides an aircraft onto a non-radar route by intercepting the commanded route name or constructed route. It takes several forms described below:
(***Note***: *"Route name" refers to the name of an actual airway such as J75 or V34. A "Constructed Route" refers to a string of waypoints/NAVAIDS/'Route Names' strung together. Also note that a 'Route Name' followed by a waypoint/NAVAID' is a unique way to get to a route, see '#2' below.)*

Example 'Route Names'	**Example 'Constructed Routes'**
J75	SPA.BUILD.UNARM
V34	TAY.J75 CTY
GEEZNO	CTY OCF TAY

1 – *The command is given with only a 'route name'.* If this is the case, the route is assumed to be on the aircrafts filed flight plan. If it is, the aircraft will resume its filed flight plan at the closest intercept point. If the route is not on the aircrafts filed flight plan, the command will fail.

2 – *The command is given with a' route name' and a fix name on that route.* This is done to help the aircraft determine which direction to travel the given route in, as airways can be navigated in either direction. The fix is in 'relation to the aircraft'. See diagrams *route1* and *route2* for explanations on how this is done. The command will fail if the given route does not exist, or if the aircraft is heading away from the new route.

3 – *The command is given with a radial, dot 'route name'.* This is done to guide an aircraft to the first fix/NAVAID of the route on that radial. **Note:** the route name must be on the aircrafts filed flight plan for the command to be successful. (DIR 125.J75 would indicate to have the aircraft go direct-to J75's first fix on the 125 radial.)

4 – *The command is given with a route name, dot radial.* This is done to guide an aircraft away from the first fix/NAVAID on the route on the given radial. **Note**: the route name must be on the aircrafts filed flight plan for the command to be successful. (DIR J75.125 would indicate to have the aircraft direct-to J75, leaving the first fix on that route on radial 125.)

5 – *The command is given as a constructed route.* This is done to have an aircraft follow a string of fixes as a new route. RTE <fix1>.<fix2>.<fix3> would tell the aircraft to fly intercept a new route consisting of fix1, fix2, and fix3. It should be noted that this also occurs for when **Note:** the aircraft may not fly to all the fixes if it wouldn't intercept them. If the aircraft was between fix1 and fix2 when the command was given, it would merge onto the route and continue to fix2. See diagram *route3* for an example of this.

Command Syntax	
INT route	Intercept, Capture, Direct-to the route/airway 'route'. 'route' must be an airway/route which was known on the aircrafts filed flight plan.
CAP route	
DIR route	
RTE route	
INT route fix	Intercept, Capture, Direct-to the route/airway 'route' – using waypoint/NAVAID 'fix' to determine the direction to travel. 'fix' must be a waypoint/NAVAID present on 'route'.
CAP route fix	
DIR route fix	
RTE route fix	
INT ###.route	Intercept, Capture, Direct-to the route/airway 'route', and intercept the first waypoint/NAVAID on 'route on radial ###. 'route' must be an airway/route which was known on the aircrafts filed flight plan.
CAP ###.route	
DIR ###.route	
RTE ###.route	
INT route.###	Intercept, Capture, Direct-to the route/airway 'route' and intercept the first waypoint/NAVAID on 'route. Leave the first waypoint/NAVAID on radial ###.
CAP route.###	
DIR route.###	
RTE route.###	

Example Controller Phraseology	**Example Command Response**
"Intercept Jay Four."	ULA163 INT J4 (J4 **was** on the aircrafts flight-plan in this instance.)
"Intercept Jay Four."	ULA163 RTE J4 FLO (J4 was **not** on the aircrafts flight-plan in this instance.)
"Track the inbound 240 Radial off the VOR and intercept Jay Four".	ULA163 RTE 240.J4 (J4 **was** on the aircrafts flight-plan in this instance.)
"Track the inbound 240 radial off the VOR and intercept Jay Four".	ULA163 DIR 240.J4 FLO (J4 was **not** on the aircrafts flight-plan in this instance.)
"Go Direct SEMET and track outbound off the VOR-DME 210 Radial."	UAL163 CAP SEMET.240 (SEMET **was** on the aircrafts flight-plan in this instance.)
"Go Direct SEMET and track outbound off the VOR-DME 210 Radial."	UAL163 RTE SEMET.240 FLO (SEMET was **not** on the aircrafts flight-plan in this instance.)

Limitations:

- Commanded route/airway must exist.
- If the command is given **without** an assistant waypoint/NAVAID then the commanded route/airway must exist on the aircrafts flight plan.
- If the command is given **with** an assistant waypoint/NAVAID then the assistant waypoint/NAVAID must exist on the commanded route.
- If the command is given with an intercepting radial, then the radial must be a number 0 through 360. The form must be in either ###.route or route.### ('route' is the route name, ### is the radial value.)
- The aircraft must be heading towards the commanded route.
- The angle of intercept onto the commanded route must be less then 90 degrees.

Let's say the controller wants the aircraft to join the J75 airway – following it northwards towards AMG144021. Note that the aircraft is close to the TAY waypoint on J75? Choosing a waypoint further from TAY will assist the aircraft – telling it which direction to travel the route in. The SimPilot can issue the command *DAL3871 RTE J75 ONEEL, or DAL3871 RTE J75 AMG144021, or DAL3871 RTE J75 <above TAY waypoint>* to have the aircraft join the airway and proceed in that direction.

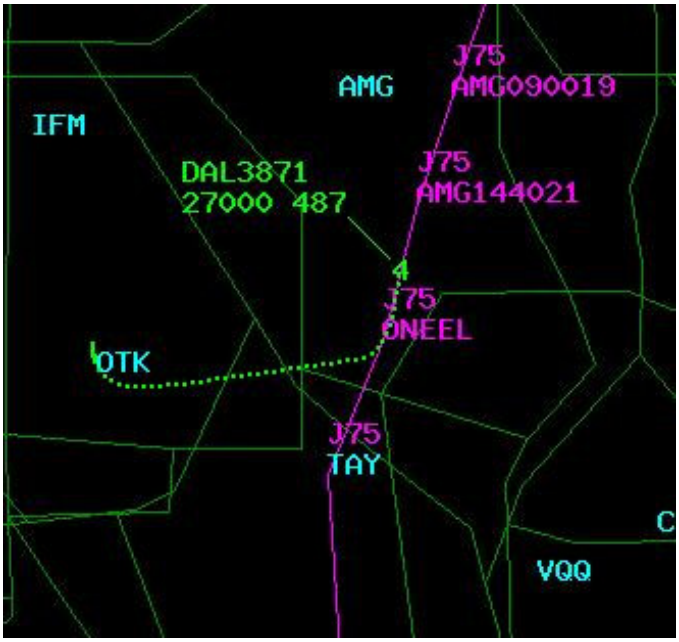


Figure 22 Route 1-Joining a route via <route name>.<assisting fix>)

The below example shows what would happen to DAL3871 if the SimPilot entered *DAL3871 RTE J75 GNV24301, or DAL3871 RTE J75 <below TAY waypoint>.*

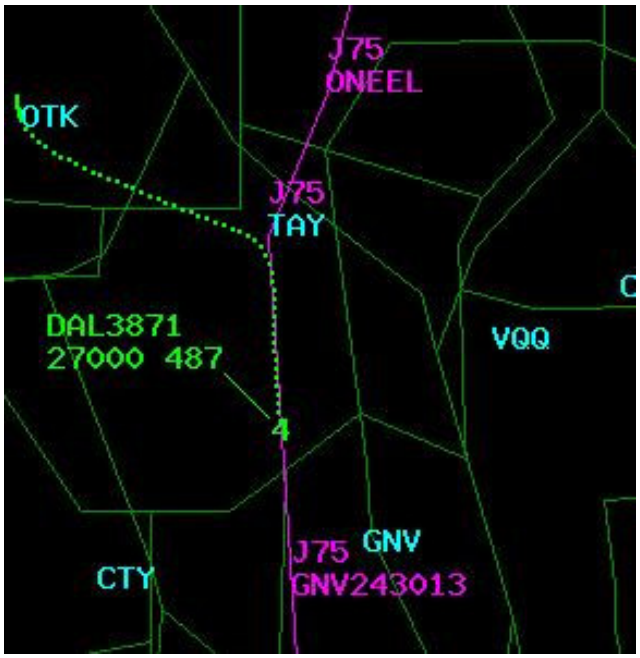


Figure 23 Route 2-Joining a route via <route name>.<assisting fix>

The route command works similarly if a string of fixes is given (either with dots (.) separating them, or spaces). If there were a group of fixes: VQQ, GNV, CTY and OCF the order an aircraft would fly them, and when the aircraft would travel to certain fixes is dependant on the order the fixes are entered into the command. If the SimPilot entered the fixes in VQQ.GNV.CTY.OCF form the following would result.
(***Note*** *that the aircraft will* ***not*** *fly to the first two fixes, as it's location to the new route (VQQ.GNV.CTY.OCF) prompts it to join between GNV and CTY, then fly the rest of the route*.)

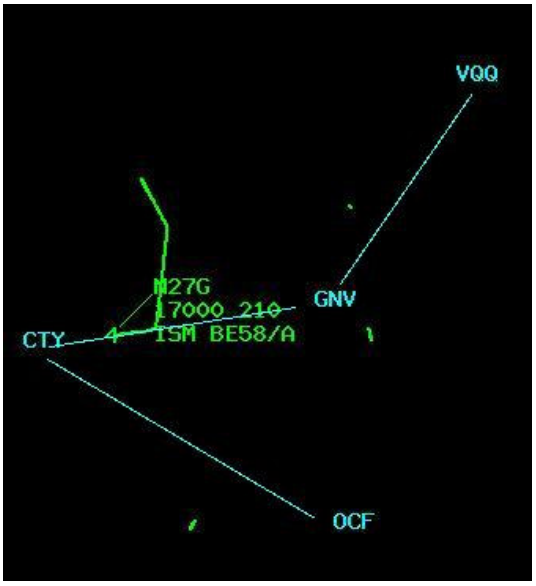


Figure 24 Route 3-Joining a new route created with <fix>.<fix>.<fix>

Below shows the aircraft continuing along this new route:

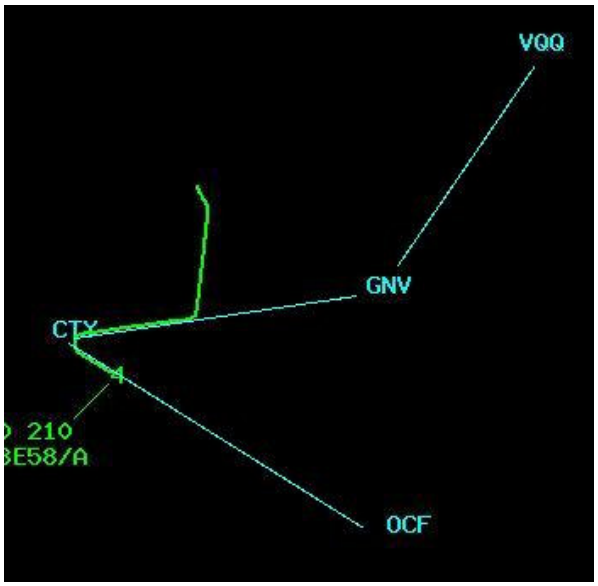


Figure 25 Route 4-Joining a new route created with <fix>.<fix>.<fix>

Had the route command been constructed with the fixes in OCF.CTY.GNV.VQQ order, the aircraft would take a different approach to joining the route and fly it in a different direction as seen below.

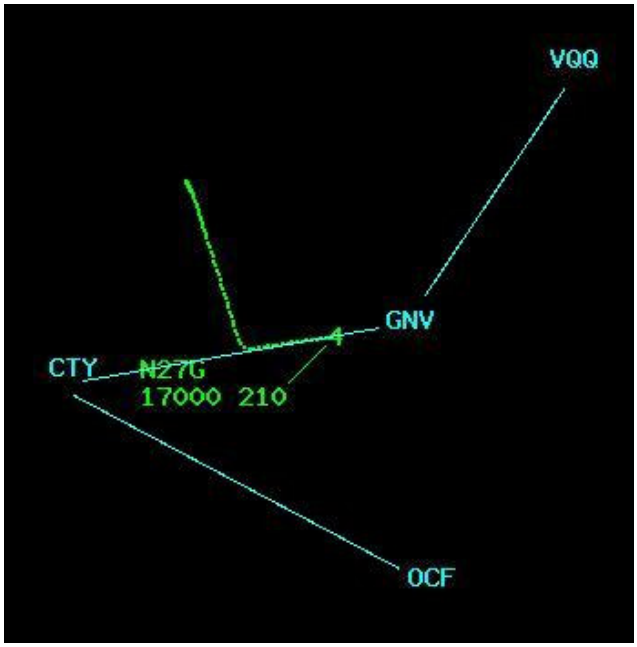


Figure 26 Route 5-Joining a new route created with <fix>.<fix>.<fix>

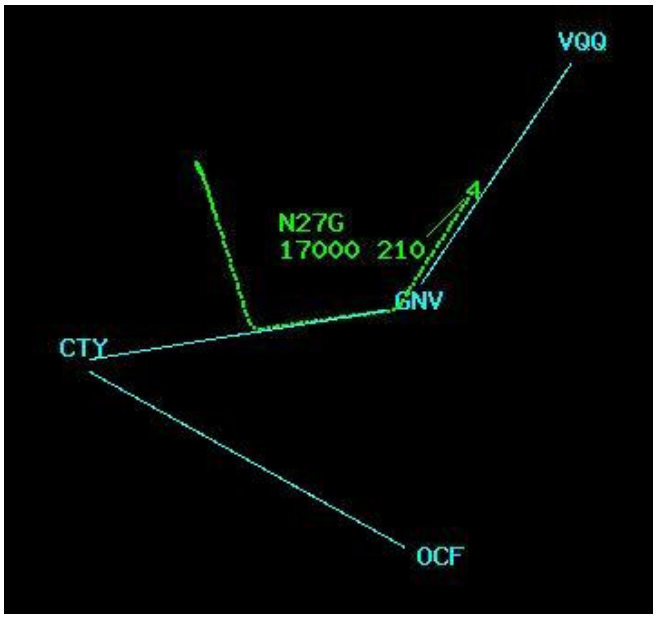


Figure 27 Route 6-Joining a new route created with <fix>.<fix>.<fix>

3.4.4 Waypoint Capture Command

CAP, INT, DIR, RTE Command

This command establishes an aircraft on a non-radar arrival route. The aircraft proceeds directly to a waypoint/NAVAID – continuing its heading, altitude and speed after the fix has been intercepted. This command is designed to allow for a smooth transition from a vectored mode to an on-route (non-radar) mode. The aircraft will remain at its present altitude and airspeed unless an altitude or airspeed command was previously issued, in which case, the aircraft will continue to that assigned altitude and/or airspeed.

Command Syntax	
CAP fix	Direct-to the waypoint/NAVAID fix.
DIR fix	
INT fix	
RTE fix	
CAP ###.fix	Direct, Capture the waypoint/NAVAID fix on the radial ###. ### is a degree 0 through 360.
DIR ###.fix	
INT ###.fix	
RTE ###.fix	
CAP fix.###	Direct, Capture the waypoint/NAVAID fix – leaving in on the radial ###. ### is a degree 0 through 360.
DIR fix.###	
INT fix.###	
RTE fix.###	

Example Controller Phraseology	**Example Command Response**
"Proceed Direct to DRAKO."	UAL163 CAP DRAKO
"Track the inbound 182 Radial off the VOR-DME and Intercept DRAKO".	UAL163 DIR 182.DRAKO
"Go Direct DRAKO and track outbound off the VOR-DME 182 Radial."."	UAL163 INT DRAKO.182

Limitations:

- Waypoint/NAVAID must exist
- If the aircraft is proceeding away from the waypoint/NAVAID and the command is issued, the software will determine the best direction to turn the aircraft to capture the waypoint. This calculated turn direction may not be the direction desired by the air traffic controller or the Sim-Pilot.
- If the command is given with a radial, the form must be radial.fix for intercepting a waypoint/NAVAID on a radial, or fix.radial for leaving a waypoint/NAVAID on a radial.
- If the command is given with the radial.fix form, the aircraft MUST BE ABLE to intercept that radial on it's current heading. If it can not do so, it will fly direct to the fix instead.

3.5 Unique Commands

All unique commands, with the exception of the hand-off command, require checking of aircraft states and implementation of other commands based upon certain pre-existing conditions. These commands consist of missed approaches, holding patterns, cross, at – after – depart, runway change, airport change and hand-off commands.

Unique Commands
Change Airport
Change Runway
Crossing Restrictions
Handoff
Holding
Missed Approach
STAR Commands
SID Commands
Squawk
Prompt
Winds
Term
Then
Intercept localizer
Use Spoilers
EQ/EQUIP Command
DataLink Wilco/Unable
Takeoff Command

These commands are described below with examples of controller phraseology and the simulation pilot commands entered in response.

3.5.1 Change Airport Command

APT Command

The Change Airport Command changes the destination airport for an aircraft. A default runway for the specified airport is also assigned to the aircraft.

Command Syntax	
APT aaa	Change arrival airport to aaa. aaa is a valid airport name.

Example Controller Phraseology	Example Command Response
"Change Airport to Los Angeles."	UAL163 APT LAX
"Change Airport to LAX."	

Limitations:

- The commanded airport must exist.

3.5.2 Change Runway Command

RWY Command

The Change Runway command allows the Sim-Pilot to change the assigned landing runway for a particular aircraft.
The command only accents runways that are defined for the aircraft's assigned airport.

Command Syntax	
RWY nnn	Change the aircraft's assigned arrival runway to runway nnn. nnn must be a valid runway name for the aircraft's assigned airport.

Example Controller Phraseology	Example Command Response
"Change Runway to One Seven Right."	UAL163 RWY 17R

Limitations:

- The commanded runway must exist at the aircrafts arrival airport.

3.5.3 Crossing Restrictions Command

CRS Command

Assign an airspeed and/or altitude to an aircraft crossing a fix/waypoint. The command accepts a fix/waypoint for crossing at a specified altitude and/or airspeed. At least one maneuver must be specified with this command.

Command Syntax	
CRS xxx aaa X xxx aaa	Cross waypoint xxx at aaa. xxx is a valid waypoint/NAVAID name. aaa is a Change Altitude or Change Speed command.
CRS xxx aaa sss X xxx aaa sss	Cross waypoint xxx at aaa and sss. Xxx is a valid waypoint/NAVAID name. aaa is a Change Altitude command. sss is a Change Speed command.

Example Controller Phraseology	Example Command Response
"Cross Sweet at One Zero Thousand Feet at Two Five Zero Knots."	UAL163 CRS SWEET A100 S250 UAL163 X SWEET A100 S250
"Cross Sweet at One Zero Thousand Feet."	UAL163 CRS SWEET A100 UAL163 X SWEET A100
"Cross Sweet at Two Five Zero Knots."	UAL163 CRS SWEET S250 UAL163 X SWEET S250

Limitations:

- The fix/waypoint must be on the aircraft's route of flight.
- The aircraft must be on-route (not being vectored).
- See limits for Altitude/Speed Commands.

3.5.4 Handoff/Contact Controller Command

HO or CC Command

The handoff command transfers aircraft control from one sector to another. As a Sim-Pilot is assigned to a sector with a corresponding controller, this command not only transfers an aircraft from one sector to another, it also transfers from Sim-Pilot to Sim-Pilot.

During a simulation, controllers hand-off aircraft to each other. The controllers select a transfer point close to a sector boundary for the Sim-Pilot to switch communications to the other controller. After the Sim-Pilot inputs the hand-off command, control of that aircraft is transferred from one Sim-Pilot station to the new Sim-Pilot station. Only the new Sim-Pilot can control that aircraft.

Command Syntax	
HO aaa	Handoff an aircraft to frequency aaa. aaa is a valid frequency.
CC aaa	Contact Controller at frequency aaa.

Example Controller Phraseology	**Example Command Response**
"Contact Denver Approach. One Two Five Seven Five."	UAL163 HO TRA or UAL163 CC TRA (***Note**: TRA is understood to be a Sector with the frequency 125.750*)
"Contact Controller Frequency One Two Five Seven Five."	UAL163 CC 153.750 or UAL163 HO 153.750

Limitations:

- Legal sectors and terminal numbers are established when initializing a Sim-Pilot station.
- The frequency entered must be a valid six digit frequency with, or without a decimal.

3.5.5 Holding Command

HL Command

The holding command guides an aircraft into a holding pattern until either the aircraft is vectored out or put onto a non-radar route.

The aircraft will fly to the commanded waypoint/NAVAID to hold. If the fix has a published hold, it will be executed as published. Any additional parameters that are given with the hold command will cause the published hold not to be used. The defaults will be used for any parameters that are not given.

For example: HOLD SELL T5
Upon arrival at SELL, the aircraft starts a 180 degree right turn. Upon completion of this turn, it travels 5 minutes before turning left, going another 5 miles to return to SELL, where the procedure is repeated.

Command Syntax	
HL (or HOLD) fix	Holds an aircraft at a waypoint/NAVAID (fix). This must be a valid name.
The following parameters are optional:	***Radial*** compass direction to fly. The default is 180 degrees if not specified.
Radial	***Turn*** is the turn direction, either left or right. The default is to turn right if not specified.
Turn	***T*** is a time based leg where the leg_length is in minutes. The default is 2 minutes if not specified.
Tleg_length or Dleg_length	***D*** is distance based leg where the leg_length is in nautical miles. The default is 2 nautical miles if not specified..
	If T or D are not specified, the default is a time based leg of 2 minutes

Example Controller Phraseology	**Example Command Response**
"Hold at SELL on the Three One Zero Radial, one minute right turns."	UAL163 HL SELL 310 T1

3.5.6 Missed Approach Command

MA Command –

This command executes a missed approach for an aircraft; the aircraft flies the runway heading, accelerates to a safe airspeed and climbs to an altitude of approximately 3000 feet above ground level.

Command Syntax	
MA	Execute a missed approach

Example Controller Phraseology	Example Command Response
"Execute a missed approach." (*Note: This is given in a more panic stricken voice.)*	UAL163 MA

Limitations:

- Aircraft must have been cleared for approach.

3.5.7 STAR (Standard Terminal Arrival Route) Command

STAR command

The STAR command gives a Sim-Pilot the mechanism to load the STAR restrictions for a particular arrival route. The STAR is described in the procedure name for the desired arrival. The procedure name must be included when this command is used.

Command Syntax	
STAR aaa.bbb	Change route to STAR route bbb taking Transition route aaa.
STAR aaa.bbb apt	Change route to STAR route bbb taking Transition route aaa to Airport apt.

Example Controller Phraseology	Example Command Response
"Cleared for the PDZ1 Arrival"	UAL163 STAR TNP.PDZ1
"Cleared for the PDZ1 Arrival to LAX."	UAL163 STAR TNP.PDZ1 LAX

Limitations:

- If an altitude command is issued after the STAR command then all altitude restrictions will be canceled, but the airspeed restrictions will still be enforced.
- If an airspeed command is given after the STAR command is issued then all airspeed restrictions will be canceled, but the altitude restrictions will still be enforced.
- The aircraft must have a valid arrival airport.

3.5.8 Winds Command

Winds command

The Winds command produces a report of the winds velocity and direction at the current position of the aircraft.

Command Syntax	
WINDS	Reports the velocity and direction of the winds at an aircrafts current position.

Example Controller Phraseology	Example Command Response
(No controller phraseology.)	UAL163 WIND

Limitations:

- If there are no winds found at an aircraft's current position, then conditions are reported as calm

3.5.9 Prompt Command

Prompt command

The Prompt command sends a message to a Sim-Pilot of an aircraft.

Command Syntax	
PROMPT message	Sends a message to the Sim-Pilot of an aircraft.

Example Controller Phraseology	Example Command Response
(No controller phraseology)	UAL163 PROMPT Hey Jill, turn this aircraft Left by twenty degrees.
	UAL163 PROMPT If you have this plane please contact controller frequency 125.750

Limitations:

- A Sim-Pilot must be assigned to the aircraft that the prompt command was given for.

3.5.10 Squawk Command

Squawk command

The Squawk command allows a Sim-Pilot to change an aircraft's beacon code or to force an aircraft to id itself.

Command Syntax	
SQ bbbb	Change beacon code of an aircraft to bbbb.
ID	Force an aircraft to id itself.
SQID	Change an aircraft's beacon code and force the aircraft to ID itself.

Example Controller Phraseology	Example Command Response
Squawk Zero Five Five Five.	UAL163 SQ 0555

Limitations:

- The beacon code entered must be an integer between 0000 and 4088.
- The beacon code must be four digits in length, 555 is an illegal beacon code; 0555 is legal.

3.5.11 SID (Standard Instrument Departure) Command

The SID command gives a Sim-Pilot the mechanism to follow a SID departure route. The SID is described in the procedure name for the desired arrival. The procedure name must be included when this command is used.

Command Syntax	
SID aaa**.**bbb	Change route to SID route aaa taking the transition route bbb.

Example Controller Phraseology	Example Command Response
	UAL163 SID DAY0.ARNES

Limitations:

- The aircraft's departure airport must match the given SID route's departure airport.
- The aircraft must have a valid departure airport.

3.5.12 THEN Command

The THEN command waits until a certain criteria or condition has occurred before invoking the given command.

Command Syntax	
Cmd1 THEN Cmd2 Cmd1 T Cmd2	After Cmd1 has occurred perform Cmd2.

Example Controller Phraseology	Example Command Response
"Reduce speed to two five zero then descend and maintain 6000."	UAL163 S250 THEN A60
"Change Heading to One Seven Zero degrees, then climb and maintain flight level Two Four Five."	UAL163 H170 T A245

3.5.13 Intercept Localizer Command

The LOC command causes the aircraft to intercept the localizer at its arrival airport.

Command Syntax	
LOC	Intercept the localizer at the aircrafts arrival airport.

Example Controller Phraseology	Example Command Response
"Turn left Zero Nine Zero maintain Altitude One Five Zero feet until established on the localizer."	UAL163 LOC

3.5.14 Equip/EQ Command

Displays the aircraft's on board navigation equipment when entered. (FMS, GPS, VOR-DME, or no-navigation will be displayed in the Pilot Messages Panel. An asterisk appears next to the navigation system the aircraft is using if more than one type is present, and if the equipment is in parenthesis then the equipment is malfunctioning.)

Command Syntax	
EQ EQUIP	Displays the aircrafts on board navigation equipment.

Example Controller Phraseology	Example Command Response
<No Controller Phraseology>	UAL163 EQ

3.5.15 Data-Link Command

When a Data-Link message is issued to a Simulation Pilot the Pilot may Wilco it or Unable to Wilco the message.

Command Syntax	
DL Wilco/Unable nnn	Wilco/unable to Wilco the DL message numbered nnn.

Example Controller Phraseology	Example Command Response
<No Controller Phraseology>	UAL163 DL Wilco 144

3.5.16 Takeoff Command

The Takeoff command will cause an aircraft that is either proposed to departure or holding at an airport to take off.

Command Syntax	
TO	Tells the proposed departure or airport held aircraft to takeoff.

Example Controller Phraseology	Example Command Response
UAL163 cleared for take off on runway 13	UAL163 TO

3.5.17 Help Command

The Help command displays the most common usage of a Simulation Pilot command onto the Pilot Message Panel. It can be used as a quick reference for entering the correct syntax for more arcane commands.

Command Syntax	
? *command*	Displays the proper syntax for *command. Command* is a Simulation Pilot command such as A, MT, TO, etc.

Example Help Commands	Displayed text
<acid> ? A	:Altitude: <acid> A[+/-]###[M] :Example: AAL747 A240
<acid> ? rte	:Route: <acid> rte <fixname>.<fixname> :Example: AAL747 rte J56

4.0 Appendix of Sim Pilot Commands

The below table shows the most common usage of the SimPilot commands.

Syntax	Description	Example
F### H###	Fly Heading ### (000 to 360 degrees)	AAL747 F270 AAL747 H270
F[+/-]### H[+/-]###	Change heading by ### (000 to 360 degrees)	AAL747 F+10 AAL747 H+10
L###	Turn left to ### (000 to 360 degrees)	AAL747 L090
L[+/-]### G###	Turn left by ### (000 to 360 degrees)	AAL747 L+10 AAL747 G010
R###	Turn right to heading ### (000 through 360 degrees)	AAL747 R90
R[+/-]### D###	Turn right by ### (000 through 360 degrees)	AAL747 R-110 AAL747 D110
MT H### Annn	Maintain heading ### until altitude nnn	AAL747 MT H230 A140
MT H###	Maintain heading ###	AAL747 MT H222
MT RW	Maintain runway heading	AAL747 MT RW
MT RW Annn	Maintain runway heading until altitude nnn	AAL747 MT RW A140
MT S	Maintain speed to the outer marker	AAL747 MT S
S###	Change indicated airspeed to ### knots	AAL747 S250
S[+/-]### C###	Change indicated airspeed by ### knots	AAL747 S+10 AAL747 C10 AAL747 C-10
S###M	Change indicated airspeed by ### knots, the aircraft should attempt to do so at its max climb/decent rate.	AAL747 S110M
S[+/-]###M C###M	Change indicated airspeed by ### knots, the aircraft should attempt to do so at its max climb/decent rate.	AAL747 S+30M AAL747 C30M

M###	Change Mach speed to ###. ### may be an integer between 55 and 87, or a real number between (.55 to .87)	AAL747 M.78 AAL747 M78
RS	Cancels speed restriction and resumes preferred speed	AAL747 RS
Res	Resume filed route	AAL747 RES
A[+/-]###	Change altitude by ### feet MSL where altitude is in hundreds of feet.	AAL747 A+10
A###	Change altitude to ### feet MSL where ### altitude is in hundreds of feet.	AAL747 A240
Exxx	Expedite to xxx, where xxx is altitude in hundreds of feet.	AAL747 E140
A### Exxx	Change altitude to ###, expedite through xxx, where ### and xxx are altitudes in hundreds of feet.	AAL747 A170 E110
CLA	Cleared for the approach (Uses the approach based on the aircraft's assigned arrival runway)	AAL747 CLA
CLA rwy	Cleared for the approach (Uses the approach based on rwy)	AAL747 CLA 25L
CLR	Cleared for the RNav approach (Uses the approach based on the aircraft's assigned arrival runway)	AAL747 CLR
CLR rwy	Cleared for the RNav approach (Uses the approach based on rwy)	AAL747 CLR 25L
APT aaa	Change arrival airport to aaa	AAL747 APT DFW
RWY aaa	Change assigned arrival runway to aaa	AAL747 RWY 17L
MA	Execute a missed approach	AAL747 MA
INT route fix DIR route fix RTE route fix CAP route fix	All are synonymous. Intercept route/airway 'route' using 'fix' to determine a direction to traverse the commanded route/airway in.	AAL747 INT J56 DLO AAL747 DIR J56 DLO AAL747 RTE J56 DLO AAL747 CAP J56 DLO

DIR fix INT fix RTE fix CAP fix	Go direct/capture/intercept the waypoint/NAVAD 'fix'.	AAL747 DIR SEMET AAL747 CAP SEMET
CRS aaa ann1 or CRS aaa ann1 ann2 or X aaa ann1	CROSS waypoint/NAVAID 'aaa' at altitude 'ann1' and/or Cross fix 'aaa' at altitude 'ann1' and speed 'ann2' (command could be altitude or speed or both)	AAL747 CRS CHE A230 AAL747 CRS CHE A230 S250 AAL747 X CHE A230
HL (or HOLD) fix rad turn length	Hold at waypoint. fix – waypoint/NAVAID 'fix', rad – radial, turn – turn direction, length – Tleg (time) or Dleg (distance)	AAL747 HL KEANN T5 AAL747 HL KEANN L
CC freq	Contact Controller at frequency	AAL747 CC 127.5
HO freq	Handoff to a frequency	AAL747 HO 127.5
XP (on, off, -Modec, +Modec)	Toggles the aircrafts transponder on/off and toggles Modec (-Modec/+Modec)	AAL747 XP on AAL747 XP –Modec
SQ beacon SQID beacon ID	Change the beacon code for an aircraft Change the beacon code for an aircraft and identify the aircraft for the controller. Identify the aircraft to the controller	AAL747 SQ 0123 AAL747 SQID 0123 AAL747 ID
STAR aaa.bbb	Change route to Star route bbb taking Transition Route aaa	AAL746 STAR TNP.PDZ1
STAR aaa.bbb [apt]	Change route to Star route bbb taking Transition Route aaa to Airport apt	AAL746 STAR TNP.PDZ1 LAX
SID aaa.bbb	Change route to Sid route aaa taking bbb away from aircraft's departure airport	AAL747 SID samf.arnes
WINDS	Produces a report of the winds velocity and direction at the aircraft's current position	AAL747 WINDS
PROMPT message	Displays message in SimPilot Workstation's Pilot Message box.	AAL747 PROMPT HELLO
TERM	Terminate the flight	AAL747 TERM

Cmd1 THEN Cmd2 or Cmd1 T Cmd2	Perform Cmd1, after the cmd has completed perform Cmd2.	AAL747 S250 THEN A160 AAL747 S250 T A160
LOC	Intercept the localizer.	AAL747 LOC
SP on/off	Toggles the spoiler on/off	AAL747 SP OFF
EQ EQUIP	Displays the aircrafts navigation equipment	AAL747 EQ AAL747 EQUIP
DL Wilco nnn DL Unable nnn	Wilco/Unable to Wilco the Data-Link message numbered nnn.	AAL747 DL Wilco 37 AAL747 DL Unable 38
TO	Causes an aircraft that is either a proposed departure, or on hold at an airport to take off.	AAL747 TO

5.0 Acknowledgements:

This Target Generation Facility (TGF) training manual is based on the documentation for Pseudo Aircraft Systems (PAS) created by NASA Ames Research Center for pseudo pilot training used by Terminal Air Traffic Control Automation (TATCA). Both the documentation and the Sim-Pilot workstation software it describes are based on chapter 5 with the goal of providing a common Graphical User Interface (GUI) for both software portability and ease of use for Air Traffic Assistants (ATAs) who work in multiple FAA simulation environments. The original figures and graphics have been replaced by examples of the new simulation interface that comply with the TGF software requirements. The TGF-developed software uses no components that require licensing and, thus, can be adapted without royalties by other government agencies involved in aerospace safety, simulation, and training.