

# **Target Generation Facility (TGF) Target Command Guide**

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# 1.0 Introduction

This section provides a brief overview of the content of this manual, which is available at [www.faa.gov/go/tgf](http://www.faa.gov/go/tgf) under the User Manual Section under “TGF Target Commands”.

## 1.1 Acronym List

Below is a list of acronyms used in this document.

- **ATC** – Air Traffic Control
- **DIS** – Distributed Interactive Simulation
- **FL** – Flight Level
- **FRD** – Fix Radial Distance
- **GPS** – Global Positioning System
- **IAS** – Indicate Airspeed
- **IFR** – Instrument Flight Rules
- **ILS** – Instrument Landing System
- **MSL** – Mean Sea Level
- **NAS** – National Airspace System
- **PVD** – Planned View Display
- **RNAV** – Area Navigation
- **RNP** – Required Navigation Performance
- **SimPilot** – Simulation Pilot
- **SPW** – SimPilot Workstation
- **TGF** – Target Generation Facility
- **VFR** – Visual Flight Rules
- **VTIS** – Visual Tower Subsystem

## 1.2 Overview of manual

There are several Sections in this Manual:

1. Section 2.0 The Pilot Commands – Contains detailed information about the Commands that a user can issue.
2. Section 3.0 Specifying Restrictions to Obey – Contains information about how to specify whether to obey certain kinds of restrictions.
3. Section 4.0 Entering Commands – Contains Tables with brief information about Commands and when a Target will accept certain commands. This Section is useful as a print out that a user can use as a quick reference guide.
4. Section 5.0 Clarification – Contains information to clarification when to use certain syntax when issuing a Command.

## 2.0 The Pilot Commands

This section contains information about Commands including a description, limitations, sample pilot responses, and sample Controller phraseology where possible. Aircraft in TGF includes fixed wing types, helicopters, and airships. In addition, TGF has the ability to simulate a ground vehicle. Unless otherwise noted any type of Target can do all commands in this manual.

### 2.1 Helicopters and Ground Vehicles

This Section contains information commands that can only be issued to helicopters and ground vehicles.

## 2.1.1 Helicopter

Helicopters can do most Air Commands **except** the following:

- Takeoff
- Land
- Prep for Approach
- Cleared for ILS Approach
- Cleared for ROUTE Approach
- Cleared for Visual Approach

### 2.1.1.1 Hover

This command causes a helicopter to hover over a given fix.

#### Notes:

- Speed and Route commands will cause a helicopter to break out of the hover.
- Issuing a heading command to a helicopter that is hovering will cause the Aircraft once it is hovering to turn to point to the heading. Heading commands will **not** break an Aircraft out of a hover.

Command Syntax	
HOVER fix	Hover over a given fix.

Example Controller Phraseology	Example Command Response
No Controller Phraseology	CG2123 HOVER HAPPY

#### Limitations:

- Fix to hover over must be valid.

### 2.1.1.2 Hover At Present Position

This command causes a helicopter to hover at its current position.

**Notes:**

- Speed and Route commands will cause a helicopter to break out of the hover.
- Issuing a heading command to a helicopter that is hovering will cause the Aircraft once it is hovering to turn to point to the heading. Heading commands will **not** break an Aircraft out of a hover.

<b>Command Syntax</b>	
HVP	Hover at current position

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
No Controller Phraseology	CG2123 HVP

## 2.1.2 Ground Vehicles

TGF can simulate ground vehicles such as a truck or a fire truck for simulations involving a TGF Ground Airport. Trucks currently can do most ground commands **except** Takeoff. Trucks can use the start fire or smoke commands with Fuselage1, Engine1, or any of the Landing Gear settings. Trucks can go faster than Aircraft on the ground. A Truck can do a maximum of about 60 knots on the ground, while an Aircraft can only go 40 knots maximum on the ground. In addition, a truck can do a 180-degree turn.

### 2.1.2.1 Turn Around

This command causes a truck to turn around 180 degrees.

Command Syntax	
TA	Turn around 180 degrees.

Example Controller Phraseology	Example Command Response
No Controller Phraseology	ZZFD01 TA

#### Limitations:

- This command can only be given to a F150, F250, F350, FIRETRUCK, TRUCK, or VEHICLE.
- The truck will turn around when it has enough room to do so.

## 2.2 Heading Commands

Heading commands change an Aircraft's horizontal travel direction.

### 2.2.1 Fly Heading Commands

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.

<b>Command Syntax</b>	
F###	Fly heading ###. ### is a heading between and including 000 to 360 degrees.
H###	
F+/-###	Change heading by ### degrees
H+/-###	

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
"Fly Heading Two Seven Zero"	UAL163 F270
	UAL163 H270

## 2.2.2 Fly Bearing or Ground Track Heading

Turn an Aircraft to a bearing or ground track heading 0 through 360 degrees. Alternatively, turn an Aircraft to a new bearing or heading by nnn degrees. The Aircraft will turn in the direction closest to the assigned bearing or ground track heading; traveling the shortest distance.

<b>Command Syntax</b>	
<b>B###</b>	Turn to ###. ### is a Bearing or Ground Track Heading of 000 through 360 degrees.
<b>B+/-###</b>	Turn by ###. ### is a Bearing or Ground Track Heading of 000 through 360 degrees.

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
No Controller Phraseology	UAL163 G270
No Controller Phraseology	UAL163 G+37
No Controller Phraseology	UAL163 G-20

### 2.2.3 Turn Right Commands

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

<b>Command Syntax</b>	
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.

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
“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 its previous heading.)
“Turn Right Three Hundred Sixty Degrees.”	UAL163 R+360 or UAL163 D360

## 2.2.4 Turn Left Commands

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

<b>Command Syntax</b>	
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###	

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
“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 its previous heading.)
“Turn Left Three Hundred Sixty Degrees”	UAL163 L-360 or UAL163 G360

## 2.2.5 Turning using a specific Bank Angle

This optional parameter allows the Aircraft to turn using a specified maximum bank angle. The maximum default bank angle is 30 degrees. **Note: Be careful when issuing this command as it may cause an Aircraft to fall out of the sky.**

<b>Command Syntax</b>	
Bhhh@bbb	Turn to bearing or ground track heading hhh degrees using a maximum bank angle of bbb degrees
Dhhh@bbb	Relative turn right to magnetic heading hhh degrees using a maximum bank angle of bbb degrees
Ghhh@bbb	Relative turn left to magnetic heading hhh degrees using a maximum bank angle of bbb degrees
Hhhh@bbb Or Fhhh@bbb	Turn to magnetic heading hhh degrees using a maximum bank angle of bbb degrees
Lhhh@bbb	Turn left to magnetic heading hhh degrees using a maximum bank angle of bbb degrees
Rhhh@bbb	Turn right to magnetic heading hhh degrees using a maximum bank angle of bbb degrees

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
No Controller Phraseology	UAL123 B110@35
No Controller Phraseology	UAL123 D230@45
No Controller Phraseology	UAL123 G230@45
No Controller Phraseology	UAL123 H230@45  or UAL123 F230@45
No Controller Phraseology	UAL123 L230@45
No Controller Phraseology	UAL123 R230@45

## 2.2.6 Stop Turn

This command causes an Aircraft to stop turning and maintain its current heading.

Command Syntax	
STOPTURN	Causes an Aircraft to stop turning and maintain its current heading.

Example Controller Phraseology	Example Command Response
“Stop Turn”	AAL123 STOPTURN
“Maintain Current Heading”	AAL123 STOPTURN

### Limitations:

- Aircraft must be currently turning.

## 2.2.7 Maintain Runway Heading

This command turns the Aircraft to its arrival runway heading and maintains that heading.

Command Syntax	
MT RW	Change an Aircraft’s heading to its arrival runway heading.
MT RW Aaaa	Change an Aircraft’s heading to its arrival runway heading until an altitude of aaa is reached.

Example Controller Phraseology	Example Command Response
“Maintain Runway Heading”.	UAL163 MT RW
“Maintain Runway Heading until reaching Four Thousand feet”.	UAL163 MT RW A40  (This command would most likely be used after a Missed Approach.)

### Limitations:

- The Aircraft must have an assigned arrival runway.
- If issued with an Altitude command, the minimum Altitude Allowance is 0 feet MSL.
- If issued with an Altitude command, the maximum Altitude Allowance is 656,000 feet MSL.

## 2.3 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) unless other was noted. A commanded altitude above 18,000 feet is issued as a ‘flight level’.

### 2.3.1 NAS Altitude

This command causes an Aircraft to prepare climb/descend to its filed desired NAS altitude.

<b>Command Syntax</b>	
NA	Climb/Descend to desired NAS altitude

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
No controller phraseology	UAL163 NA

#### **Limitations:**

- Aircraft must have a desired NAS altitude in its flight plan.

### 2.3.2 Change Altitude, and Expedite Commands

A (Altitude), AF (Altitude in Feet), E (Expedite Altitude), and EMA (Emergency Altitude)

These commands either climb or descend an Aircraft regardless of current altitude.  
*(Note: MSL refers to Mean Sea-Level.)*

**Note:** For expedited descents, the E command will only turn on the Aircraft's speed brakes. The Aircraft's desired indicated airspeed (IAS) remains unchanged. Once the Aircraft has reached the target altitude then the Aircraft will resume what it was doing before the E command was issued. In contrast, if the EMA command is issued then the Aircraft will do its best to meet the altitude requested (this includes changing its desired IAS to increase the descent rate) and then will remain at the specified altitude to await further instructions.

<b>Command Syntax</b>	
A###	Change the altitude to ### feet MSL. ### is the altitude in hundreds of feet.
A+/-###	Change altitude by ### feet MSL where altitude is in hundreds of feet.
AF###	Change the altitude to ### feet MSL. ### is the altitude in feet.
AF+/-###	Change altitude by ### feet MSL where altitude is in feet.
Exxx	Change the altitude to xxx. xxx is the altitude in hundreds of feet. The Aircraft will expedite to reach the commanded altitude without changing the Aircraft's forward speed.
Exxx T A###	Change altitude to ###, expediting through altitude xxx. ### and xxx are altitudes given in hundreds of feet.
EMAx	Change the altitude to xxx. xxx is the altitude in hundreds of feet. The Aircraft will expedite to reach the commanded altitude by doing whatever is necessary.

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
“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
“Descend and Maintain Two Hundred.”	UAL163 A002
No Controller Phraseology	UAL163 AF5050
“Expedite through altitude One Six Zero.”	UAL163 E160
“Climb and maintain flight level Two Three Zero, expedite through One Seven Zero.”	UAL163 E170 T A230

**Limitations:**

- Minimum Altitude Allowance is 0 feet MSL.
- Maximum Altitude Allowance is 656,000 feet MSL.

**2.3.3 Expedite Altitude Change**

This command will expedite an Aircraft’s altitude change.

<b>Command Syntax</b>	
EXP	Expedite the Aircraft’s altitude change.

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
“Expedite your descent” or “Descend Immediately” or “Expedite your climb”	UAL163 EXP

**Limitations:**

- The Aircraft cannot already be expediting its altitude change.
- The Aircraft must be more than 500 ft. from its target altitude.

### 2.3.4 Vertical Velocity

The Vertical Velocity Command changes the rate at which an Aircraft climbs or descends to its assigned altitude. The Aircraft will only use this rate until it reaches its current assigned altitude. If a new altitude command is entered after the vertical velocity command, then the Aircraft will use its preferred/normal rate of descent or climb.

For example: A200 V2000

If the Aircraft is higher than 20,000 feet then the Aircraft will descend to 20,000 feet while maintaining an vertical velocity of -2,000 feet per minute as long as it is able. If the Aircraft is lower than 20,000 feet then the Aircraft will climb to 20,000 feet while maintaining a vertical velocity of +2,000 feet per minute as long as it is able.

Command Syntax	
V+####	Increase the vertical velocity by #### feet per minute to the current vertical velocity.
V-####	Decrease the vertical velocity by #### feet per minute to the current vertical velocity.
V####	Change the vertical velocity to ##### feet per minute.

#### Limitations:

- The command must be either given with an altitude change or issued to an Aircraft that is already changing its altitude.
- Minimum Vertical Velocity Allowed is 100 feet per minute
- Maximum Vertical Velocity Allowed is 4,000 feet per minute

## **Warnings:**

- For the Vertical Velocity Command you must specify the exact rate in feet per minute that you want.
- If a Vertical Velocity Command is given to an Aircraft in an expedited climb/descent state then the vertical velocity command will override the expedited climb/descent state.
- If an Aircraft is between -500 feet or +500 feet of its assigned altitude then vertical velocity commands will be rejected.
- If the desired speed of an Aircraft is more than 250 knots and the Aircraft is instructed to go to an altitude below 10,000 feet, any vertical velocity commands given to the Aircraft will be rejected.
- If the vertical velocity cannot be maintained during a climb with a specified vertical velocity, then a warning prompt will be sent to a SimPilot Workstation (if any) to notify the controller.
- If the speed cannot be maintained (speed increases more than 10 knots over its current assigned speed) during a descent with a specified vertical velocity, then a warning prompt will be sent to a SimPilot Workstation (if any) to notify the controller.

## Examples:

### Notes:

- *The instruction to maintain a certain vertical velocity is not contained in the FAA ORDER 7110.65, Air Traffic Control. Therefore, phraseology issued by a controller may differ from the examples given in this document.*
- *The controller may also say “If Feasible” either prior to or after issuing the rate of climb/descent.*

*Controller Phraseology:* Delta Fifty-Five climb and maintain Flight Level Two Seven Zero, maintain one thousand five hundred feet per minute if feasible.

*Command Entry:* DAL55 A270 V1500

*Controller Phraseology:* Learjet One Alpha Papa, descend and maintain Flight Level Two One Zero, maintain three thousand feet per minute.

*Command Entry:* N1AP A210 V3000

*Controller Phraseology:* US Air Three Ten maintain two thousand five hundred feet per minute in your descent.

*Command Entry:* USA310 V2500

*Controller Phraseology:* Frontier Flight One Hundred increase your rate of descent by five hundred feet per minute.

*Command Entry:* FFT100 V+500

*Controller Phraseology:* Continental Eight Fifty-Two decrease your rate of descent by one thousand feet per minute.

*Command Entry:* COA852 V-1000

*Controller Phraseology:* Cactus Two Hundred decrease your rate of climb by five hundred feet per minute.

*Command Entry:* AWE200 V-500

*Controller Phraseology:* November Nine Seven One Tango increase your rate of climb by one thousand feet per minute.

*Command Entry:* N971T V+1000

*Controller Phraseology:* United Five Ten increase your rate of descent to one thousand five hundred feet per minute.

*Command Entry:* UAL510 V1500

## 2.4 Speed Commands

The speed commands change the airspeed of an Aircraft regardless of its current speed. The command can be input as either an absolute airspeed or an incremental change.

**Note:** If an Aircraft is landing, and a speed is issued that is too low then TGF will send a message that contains the lowest practical speed for the Aircraft and TGF will assign the Aircraft this speed.

### 2.4.1 Change Indicated Airspeed Commands

The S command changes an Aircraft's airspeed to a new indicated airspeed (knots). The S+/- and C commands increase/decrease the Aircraft's speed incrementally in terms of the Aircraft's current speed.

<b>Command Syntax</b>	
ATS###	<p>Change an Aircraft's indicated airspeed to ### knots after the Aircraft takes off. ### is the airspeed in knots.</p> <p><b>Note:</b> This command should only be used if an Aircraft is on the ground and yet to takeoff.</p>
ATS+/-###	<p>Change an Aircraft's indicated airspeed by ### knots after the Aircraft takes off. ### is the airspeed in knots.</p> <p><b>Note:</b> This command should only be used if an Aircraft is on the ground and yet to takeoff.</p>
S###	<p>Change an Aircraft's indicated airspeed to ### knots. ### is the airspeed in knots.</p>
S+/-###	<p>Change an Aircraft's indicated airspeed by ### knots. ### is the airspeed in knots.</p>
C###	
RS	<p>Resume previous speed.</p>

Example Controller Phraseology	Example Command Response
“Maintain Two One Zero Knots”	UAL163 ATS210 (If Aircraft is on the ground and yet to takeoff)  or  UAL163 S210 (If Aircraft is in the air)
“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 (If Aircraft is in the air)  or  UAL163 ATS+30 (if Aircraft is on the ground and to takeoff)
“Decrease speed by Two Zero Knots.”	UAL163 S-20 or UAL163 C-2M0  or  UAL163 ATS-20 (if Aircraft is on the ground and to takeoff)
“Resume previous speed.”	UAL163 RS

**Limitations:**

- S and ATS commands limit minimum speed allowance to 0 knots.
- S and ATS commands limit maximum speed allowance to 900 knots.
- S+/-, ATS+/-, and C commands limits minimum speed change to -200 knots.
- S+/-, ATS +/- and C commands limits maximum speed change to 200 knots.

## 2.4.2 True Airspeed

This command changes an Aircraft's airspeed to a new true airspeed (knots).

<b>Command Syntax</b>	
TS###	Change an Aircraft's true airspeed to ### knots. ### is the airspeed in knots.
TS+/-###	Change an Aircraft's true airspeed by ### knots. ### is the airspeed in knots.

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
No Controller Phraseology	UAL163 TS250

### **Limitations:**

- TS command limits minimum speed allowance to 0 knots.
- TS command limits maximum speed allowance to 900 knots.
- TS+/- commands limits minimum speed change to -200 knots.
- TS+/- commands limits maximum speed change to 200 knots.

### 2.4.3 Mach

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.

<b>Command Syntax</b>	
M###	Change the Mach speed of the Aircraft to ###.

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
“Increase Speed to Mach Point Eight Two.”	UAL163 M.82
“Increase Speed to Mach Eight Two.”	UAL163 M82
“Decrease Speed to Mach Point Five Nine.”	UAL163 M.59
“Decrease Speed to Mach Five Nine.”	UAL163 M59

#### **Limitations:**

- The must be above its Mach transition altitude.

## 2.4.4 Maintain Speed until Outer Marker

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

<b>Command Syntax</b>	
MTS	Causes an Aircraft to maintain its current indicated airspeed until it reaches the outer marker on its ILS.

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
“Maintain speed until Outer Marker.”	UAL163 MTS

### **Limitations:**

- There must be a Localizer/Outer Marker on the Aircraft’s route.

## 2.5 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 approach clearances.

### 2.5.1 Prepare for Approach

This command causes an Aircraft to prepare to make an approach as its arrival airport.

<b>Command Syntax</b>	
APCH	Prepares Aircraft for approach at its arrival airport.

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
No controller phraseology	UAL163 APCH

#### **Limitations:**

- Aircraft must have a valid Arrival Airport and Runway.
- Cannot be combined with a clearance to land command such as CLA, CLV, or CLR.

## 2.5.2 Clearance for an Instrument Landing System (ILS) Approach

This command establishes an Aircraft on a final approach course that 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.

**Note:** An Aircraft may be cleared to approach an airport but not to land. If CLA command is issued with a NL or XL, then the Aircraft is only cleared to approach the Aircraft and has not yet been cleared to land. If an Aircraft is only cleared to approach an airport and it has not been given landing clearance when the Aircraft is five nautical miles out on final, then a prompt is sent to the SimPilot Workstation (SPW) to have the SimPilot ask for landing clearance. If landing clearance is not given to the Aircraft, then a similar prompt is sent when the Aircraft is one nautical mile out on final. If the Aircraft reaches ½ nautical mile out from the airport on final and the Aircraft has not been given clearance to land then TGF will issue an automatic go around and send a prompt to the SPW to have the SimPilot notify the controller as to the situation.

<b>Command Syntax</b>	
CLA	Cleared for the ILS approach defined for the Aircraft's assigned arrival runway.
CLA rwy	Cleared for the ILS approach defined for rwy. <b>WARNING:</b> If this command is issued to an Aircraft with a ground arrival route, then issuing this command will cause the Aircraft to alter its ground arrival route.
CLA NL or CLA XL	Cleared for the ILS approach defined for the Aircraft's assigned arrival runway: prompts and missed approach for non-landing clearance will be sent appropriate distances from the runway.
CLA NL rwy or CLA XL rwy	Cleared for the ILS approach defined for 'rwy': prompts and missed approach for non-landing clearance will be sent at appropriate distances from the runway. <b>WARNING:</b> If this command is issued to an Aircraft with a ground arrival route, then issuing this command will cause the Aircraft to alter its ground arrival route.

Example Controller Phraseology	Example Command Response
<p>“Cleared to ILS approach runway Two Six Left”“</p>	<p>UAL163 CLA NL</p> <p>or</p> <p>UAL163 CLA XL</p> <p><i>(Note: Runway 26L was already defined as the Aircraft’s arrival runway.)</i></p>
	<p>UAL163 CLA NL 26L</p> <p>or</p> <p>UAL163 CLA XL 26L</p> <p><i>(Note: Runway 26L was not defined as the Aircraft’s arrival runway.)</i></p>
<p>“Cleared to land runway Two Six Left”</p>	<p>UAL163 CLA <i>(Note: Runway 26L was already defined as the Aircraft’s arrival runway.)</i></p>
	<p>UAL163 CLA 26L <i>(Note: Runway 26L was not defined as the Aircraft’s arrival runway.)</i></p>

**Limitations:**

- The Aircraft must have an arrival airport.
- If the CLA rwy command is issued, the runway must be present at the Aircraft’s arrival airport.
- The Aircraft cannot be told to land at a different runway from the one it was cleared to approach the airport on (unless a missed approach is done first).

### 2.5.3 Clearance for Route Approach

This command establishes an Aircraft on a route approach course that proceeds to touchdown, as though a pilot is navigating the Aircraft down to a landing on an assigned runway. Route Approaches include:

1. RNav
2. GPS
3. RNP

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 nnn	Cleared for the Route approach that is defined by nnn for the Aircraft's assigned arrival runway.
CLR nnn RWY rwy	Cleared for the approach that is defined by nnn on runway rwy. <b>WARNING:</b> If this command is issued to an Aircraft with a ground arrival route, then issuing this command will cause the Aircraft to alter its ground arrival route.
CLR fix.nnn	Cleared for the approach that is defined by nnn for the Aircraft's assigned arrival runway.

Example Controller Phraseology	Example Command Response
"Cleared for RNav Approach Y runway Two Six Left"	UAL163 CLR Y ( <i>Note: Runway 26L was already defined as the Aircraft's arrival runway.</i> )
	UAL163 CLR Y RWY 26L ( <i>Note: Runway 26L was not defined as the Aircraft's arrival runway.</i> )
"Cleared direct CENTR, cleared RNav Approach Y runway Two Six Left"	UAL163 CLR CENTR.Y 26L ( <i>Note: Assumes that CENTR is on RNAV Y for Runway 26L</i> )

#### Limitations:

- The Aircraft must have an arrival airport.
- The Route approach given must be valid.
- If the CLR command is issued with a runway, then the runway must be present on the Aircraft's arrival airport.

## 2.5.4 Cleared for Visual Approach

The Cleared for Visual Approach command causes the Aircraft to land at its arrival airport on its arrival runway using a predefined visual approach.

<b>Command Syntax</b>	
CLV	Causes Aircraft to make visual landing on its arrival runway at its arrival airport. Assumes that Aircraft has an arrival airport and runway.
CLV rwy	Causes Aircraft to make visual landing on the specified runway rwy at its arrival airport. Assumes that Aircraft has an arrival airport.

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
“Cleared Visual Approach Runway Two Seven Right”	N12KB CLV ( <i>Note: Runway 27R was already defined as the Aircraft’s arrival runway.</i> )
“Cleared Visual Approach Runway Two Seven Right”	N12KB CLV 27R

### Limitations:

- Aircraft must have a valid arrival Airport and Runway.
- The Aircraft’s arrival Runway must have valid visual approach defined.

### 2.5.5 Offset Route

The offset command will cause an Aircraft to fly at a specified distance and direction from its current route creating an impromptu Area Navigation (RNAV) Route.

<b>Command Syntax</b>	
OFFSET (or OS) Lnn.n	Offset current route by nn.n nautical miles to the left of the Aircraft's forward motion.
OFFSET (or OS) Rnn.n	Offset current route by nn.n nautical miles to the right of the Aircraft's forward motion.

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
"Offset eight miles right of Victor six"	OFFSET R8 ( <i>Note: Assuming that Aircraft is currently flying Victor six.</i> )

#### **Limitations:**

- Only one decimal place is accepted. Any digits after the first decimal place are truncated. For example, 5.01 becomes 5.0.
- The maximum offset distance is 99.9 nautical miles.
- The offset is not cumulative i.e. if an Aircraft flying its current route is given a command of OFFSET L5; then later given a command of OFFSET L6 the result is the Aircraft will now fly six nautical miles to the left of its current route (not eleven).

## 2.5.6 Enforce Equipment Restrictions

The navigation command will cause an Aircraft to check whether it can fly a route based on the Aircraft's equipment.

<b>Command Syntax</b>	
NAV SIM	Turn off strict enforcement of equipment restrictions causing an Aircraft to fly any route given to it.
NAV EQUIP	Turns on strict enforcement of equipment restrictions causing an Aircraft to reject any route given to it that contains fixes/waypoints that the Aircraft's equipment cannot handle.

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
No controller phraseology	NAV SIM
No controller phraseology	NAV EQUIP

### Notes:

- If strict enforcement of equipment restrictions is on and a route is given to an Aircraft during the simulation that the Aircraft is not capable of flying, the Aircraft will issue a prompt back to the pilot to inform the controller that the Aircraft cannot perform the route and the Aircraft will ignore the entire route.
- If a route was previously issued that contains a fix/waypoint and the command to enforce limitations is issued the Aircraft will issue a prompt that the pilot should notify the controller that strict route following is in effect but its route contains a waypoint. However, the Aircraft will continue to follow this route under the assumption that the controller will issue further instructions. This means that care must be taken when doing scenario development to ensure that an Aircraft's flight plan does not contain a route that an Aircraft's equipment is not capable of flying.

## 2.5.7 Route Modification Commands

A Route that is part of a route Modification Command can consist of the following:

1. Airports
2. Fixes
3. Fix Radial Distances (FRDs) (see Note 1)
4. Latitude/Longitudes (see Note 2)
5. NAS Airways
6. Military Routes

**Note 1:** If the Aircraft Equipage allows the Aircraft to find the FRD based on a Fix and the Aircraft is enforcing equipment restrictions, then the FRD can be included in the Route. The format for specifying an FRD is <fixname><3-digit-radial><3-digit-distance>. An example FRD is GNV315005.

**Note 2:** If the Aircraft Equipage allows the Aircraft to find a Latitude/Longitude and the Aircraft is enforcing equipment restrictions, then the Latitude/Longitude may be included in a Route. There are several formats for specifying Latitude/Longitude.

The format for specifying a Latitude/Longitude using compass designations of North, South, East, and West is <DDMM[SS][N|S]><[D]DDMM[SS][E|W]>. Where D is Degrees, M is Minutes, and S is Seconds. An example Latitude/Longitude using this format is 392727N/0743437W or 3338N/0842540W.

The format for specifying Latitude/Longitude without a compass designation is <+|-DDMM[SS]><+|- [D]DDMM[SS]>. Where D is Degrees, M is Minutes, S is Seconds, a + Latitude is North whereas a – Latitude is South, and a + Longitude is East whereas – Longitude is West. An example Latitude/Longitude using this format is +392727/-0743437 or +3338/-0842540.

There are the following Route Modification Commands:

1. **RTE** – This Command causes the Aircraft to join the specified Route. The Aircraft is **not** required to start at the beginning of the Route. Instead, the Aircraft will attempt to use its current desired heading as an intercept bearing to the Route; however, if there is no interception point on the Route the Aircraft will try to determine a reasonable merge point.
2. **DIR** – This Command causes the Aircraft to proceed from its current position to the start of the Route. This guarantees that the Aircraft starts at the beginning of the Route. The Aircraft does not bypass any part of the Route due to merging. Unlike the RTE command the DIR command cannot start with an Airway.

### 2.5.7.1 Capture Fix, Latitude/Longitude, or Fix Radial Distance

An Aircraft may proceed directly to a Waypoint/NAVAID. If the Fix is part of the Aircraft's current route of flight, then the Aircraft intercept the route of flight at the Fix. This allows 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 otherwise instructed

<b>Command Syntax</b>	
RTE fix	Direct-to the Waypoint/NAVAID fix.
DIR fix	

#### **Limitations:**

- Waypoint/NAVAID must exist
- If the Aircraft is proceeding away from the Waypoint/NAVAID when the command is issued, then 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 user.

### 2.5.7.2 Intercept Airway or Military Route

Intercept a NAS Airway or Military Route.

Command Syntax	
RTE route	Intercept, Capture, Direct-to the airway named 'route'. The airway must be part of the Aircraft's current flight plan.
RTE route.fix	Intercept, Capture, Direct-to named airway 'route' – using waypoint/NAVAID 'fix' to determine the direction to travel. 'Fix' must be a waypoint/NAVAID present on 'route'.
RTE entry.route.exit	Intercept, Capture, Direct-to named airway 'route' – using waypoint/NAVAID 'entry' to determine where to intercept route and 'exit' to determine the direction to travel. 'entry' and 'exit' must be a waypoint/NAVAID present on 'route'.

Example Controller Phraseology	Example Command Response
"Intercept Jay Four."	UAL163 RTE J4 (J4 <b>was</b> on the Aircraft's flight-plan in this instance.)
"Intercept Jay Four."	UAL257 RTE J4.FLO (J4 <b>was not</b> on the Aircraft's current route of flight in this instance but there is an intercept point.)
"Intercept Jay Four."	UAL876 RTE IRQ.J4.FLO (J4 <b>was not</b> on the Aircraft's current route of flight in this instance and there is no intercept point.)

#### Limitations:

- Commanded airway must exist.
- If the command is given **without** an assistant Fixes, then the airway must exist on the Aircraft's current route of flight.
- If the command is given **with** an assistant Fixes, then the assistant Fixes must exist on the airway.
- If airway given is not part of the Aircraft's current route of flight, then airway must intersect the Aircraft's current route of flight or entry and exit assistant Fixes must be used.

### 2.5.7.3 Track Inbound to a Fix

Guide an Aircraft to the Waypoint/NAVAID on a Radial.

Command Syntax	
RTE ###.fix	Direct/Capture the waypoint/NAVAID fix on the radial ###. ### is a degree 0 through 360.
DIR ###.fix	

Example Controller Phraseology	Example Command Response
“Track the inbound 182 Radial off the VOR-DME and Intercept DRAKO”.	UAL163 DIR 182.DRAKO

#### Limitations:

- Waypoint/NAVAID must exist
- Radial must be valid
- The Aircraft must be able to intercept Waypoint/NAVAID on the radial.

### 2.5.7.4 Join a Route

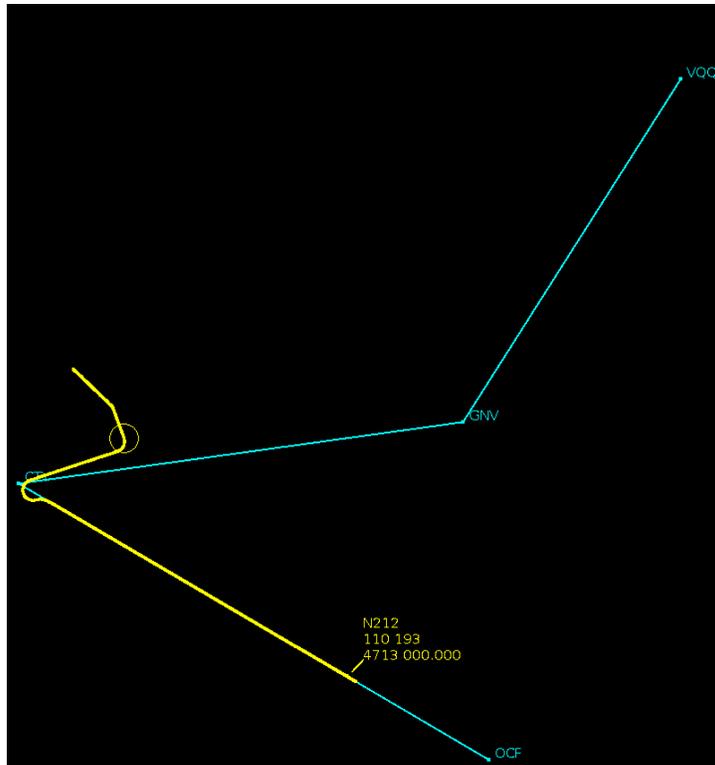
An Aircraft can follow a route that consists of a string of Fixes (either with two dots (..) separating them, or spaces).

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 dependent

1. Command used
2. On the order the fixes are entered the command.

#### 2.5.7.4.1 Example 1

If the SimPilot entered the command: “RTE VQQ..GNV..CTY..OCF” the following would result.



**Figure 1** RTE Command with <fix>..<fix>..<fix>

**Note:** Because “RTE” is used, the Aircraft will **not** fly to the first two fixes, as its location to the new route “VQQ..GNV..CTY..OCF” will cause the Aircraft join between GNV and CTY, then fly the rest of the route.

If the SimPilot entered the command: “DIR VQQ..GNV..CTY..OCF” the Aircraft would fly to OCF, then fly the rest of the route.

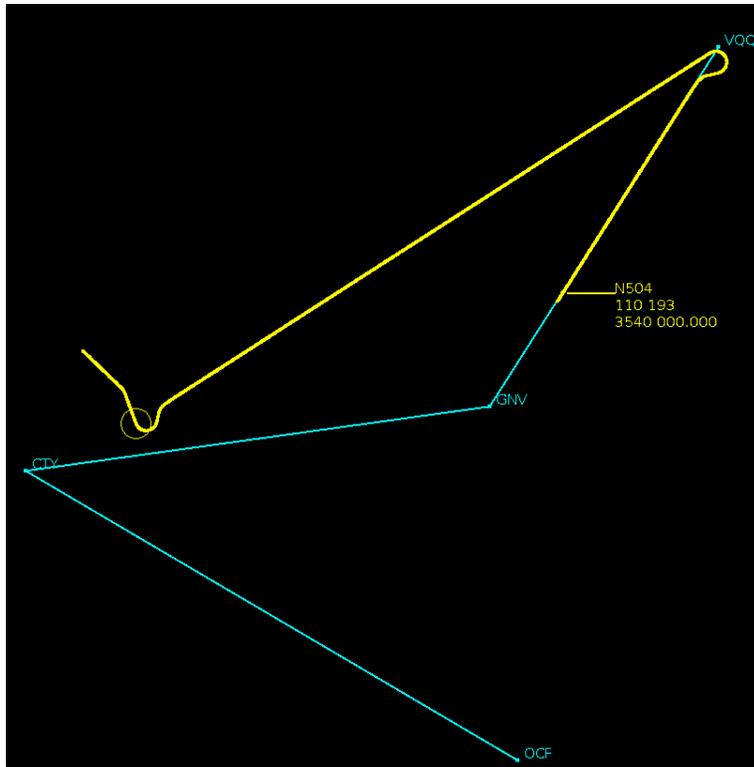
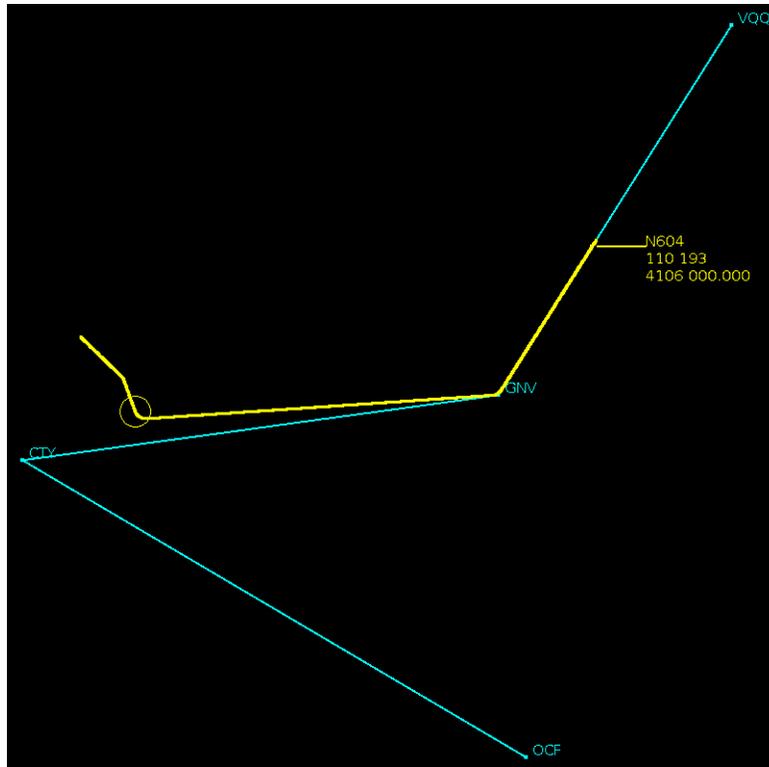


Figure 2 DIR Command with <fix>..<fix>..<fix>

#### 2.5.7.4.2 Example 2

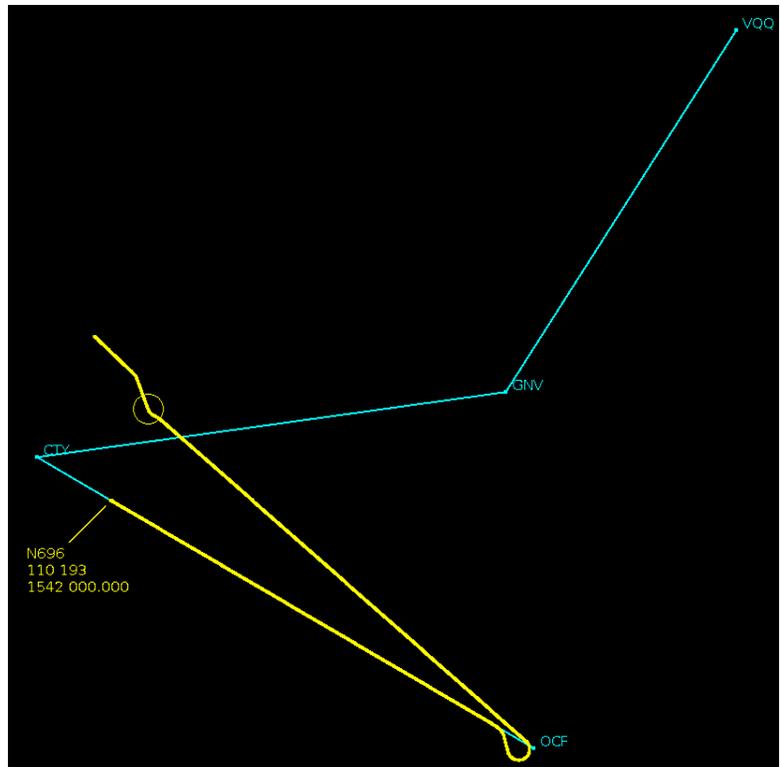
Had the route command been constructed with the fixes in OCF..CTY..GNV..VQQ order, the Aircraft would take a different approach to joining the route and fly it in a different direction.

If the SimPilot entered the command: “RTE OCF..CTY..GNV..VQQ” the following would result.



**Figure 3 RTE Command with opposite order of <fix>..<fix>..<fix>**

If the SimPilot entered the command: “DIR OCF..CTY..GNV..VQQ” the following would result.



**Figure 4 DIR Command with opposite order of <fix>..<fix>..<fix>**

## 2.5.8 Resume Route Commands

This command causes an Aircraft to resume its filed or current route of flight.

Command Syntax	
RES (or RESUME or =)	Resume current route
RES (or RESUME or =) F	Resume filed route
RF fix	Resume current route at a given fix

Example Controller Phraseology	Example Command Response
“Resume Own Navigation”	UAL163 RES Or UAL163 RESUME Or UAL163 =
“Proceed On Course”	UAL163 RES Or UAL163 RESUME Or UAL163 =
No Phraseology	UAL163 RES F Or UAL163 RESUME F Or UAL163 = F
“Proceed Direct BAASS, rest of route unchanged”	UAL163 RF BAASS

### Limitations:

- If resuming route at fix, then fix given must be part of the route resuming.

## 2.6 Communication Commands

Communication commands change an Aircraft's radio frequency or the status of its transponder. In addition, communication commands are used to send a Data Com Downlink messages to an air traffic controller.

Communication Commands
Datalink
Handoff
Squawk
Transponder

### 2.6.1 Downlink Command

The DL command allows the user to send a Downlink message to Air Traffic Control. The Downlink message can be a request, status update, an indication of a situation, or an indication that the Aircraft is taking emergency action.

#### 2.6.1.1 Request Messages

TGF can send several Downlink Request messages to Air Traffic Control.

Command Syntax	
DL (or DATALINK) Aaaa	Downlink request for flight level aaa.
DL (or DATALINK) DIR fix	Downlink request to fly direct to Fix fix.
DL (or DATALINK) RTE route	Downlink request to fly Route route.
DL (or DATALINK) CLA [rwy]	Downlink request to fly an Route approach. Can Optionally specify a Runway rwy to use.
DL (or DATALINK) Ssss	Downlink request for Indicated Airspeed sss in knots.
DL (or DATALINK) Mm[.]mm	Downlink request for Mach m.mmm.

<b>Command Syntax</b>	
DL (or DATALINK) CLR [rwy]	Downlink request to fly an Route approach. Can Optionally specify a Runway rwy to use.
DL (or DATALINK) SID sidRouteName.transRouteName	Downlink request to fly SID Route sidRouteName to Transition Route transRouteName
DL (or DATALINK) STAR transRouteName.starRouteName [apt]	Downlink request to fly Transition Route transRouteName to STAR Route starRouteName. Can Optionally specify an Airport apt to arrive.

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
No Controller Phraseology	UAL163 DL A200
No Controller Phraseology	AAL123 DL DIR CTY
No Controller Phraseology	UAL163 DL RTE J56.DLO
No Controller Phraseology	UAL122 DL CLA
No Controller Phraseology	FFT440 DL S340
No Controller Phraseology	ASA56 DL M080
No Controller Phraseology	FFT440 DL CLR
No Controller Phraseology	USA350 DL SID DAY10.ARNES
No Controller Phraseology	DAL700 DL STAR TNP.PDZ1

**Limitations:**

- The Aircraft must be equipped with Data Link.
- Must contain a valid downlink request command.

### 2.6.1.2 Status Update

Downlink messages that contain information about the status of an Aircraft.

Command Syntax	
DL (or DATALINK) AL	Downlink message containing the Aircraft's current Desired Altitude.

Example Controller Phraseology	Example Command Response
No Controller Phraseology	UAL163 DL AL

#### Limitations:

- The Aircraft must be equipped with Data Link.

### 2.6.1.3 Notification of a Situation

Downlink messages sent to inform ATC of a situation.

Command Syntax	
DL (or DATALINK) CANCEL	Notify ATC of cancelation of emergency.
DL (or DATALINK) MAYDAY	Notify ATC of immediate danger.
DL (or DATALINK) PAN	Notify ATC of situation of urgency.

Example Controller Phraseology	Example Command Response
No Controller Phraseology	UAL163 DL CANCEL
No Controller Phraseology	UAL163 DL MAYDAY
No Controller Phraseology	UAL163 DL PAN

#### Limitations:

- The Aircraft must be equipped with Data Link.
- Must contain a valid downlink situation.

### 2.6.1.4 Emergency Action

Downlink messages sent to inform ATC of that an Aircraft has taken action to avoid/in response to an emergency.

<b>Command Syntax</b>	
DL (or DATALINK) DIV (or DIVERT) ffff	Inform ATC that an Aircraft is heading direct to fix fff.
DL (or DATALINK) DIV (or DIVERT) rrrr	Inform ATC that an Aircraft has changed the route of flight to rrrr.
DL (or DATALINK) EMERaaa	Inform ATC that an Aircraft is descending/climbing to altitude level aaa.
DL (or DATALINK) OS (or OFFSET) Lnnn.n	Inform ATC that an Aircraft has deviated to the left of its current route of flight by nnn.n nautical miles.
DL (or DATALINK) OS (or OFFSET) Rnnn.n	Inform ATC that an Aircraft has deviated to the right of its current route of flight by nnn.n nautical miles.

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
No Controller Phraseology	UAL163 DL DIV GROVE
No Controller Phraseology	UAL163 DL DIV SUNOL..KSFO
No Controller Phraseology	UAL163 DL EMER200
No Controller Phraseology	UAL163 DL OS L015
No Controller Phraseology	UAL163 DL OS R020

#### **Limitations:**

- The Aircraft must be equipped with Data Link.
- Must contain a valid downlink emergency action command.

## 2.6.2 Handoff/Contact Controller Commands

The handoff command transfers Aircraft control from one sector to another. As a SimPilot Workstation (SPW) 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 SPW to SPW.

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

<b>Command Syntax</b>	
HO aaa	Handoff an Aircraft to frequency aaa. aaa is a valid frequency.
CC aaa	Contact Controller at frequency aaa.

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
“Contact Controller Frequency One Two Five Seven Five.”	UAL163 CC 125.750  or  UAL163 HO 125.750

### Limitations:

- Legal sectors and terminal numbers are established when the simulation is loaded.
- The frequency entered must be a valid six-digit frequency with, or without a decimal.

### 2.6.3 Squawk and Ident Commands

The Squawk command allows a user to change an Aircraft's beacon code or to force an Aircraft to ID itself.

<b>Command Syntax</b>	
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.

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
"Squawk Zero Five Five Five."	UAL163 SQ 0555

#### **Limitations:**

- The beacon code entered must be an octal integer between 0000 and 7777.
- The beacon code must be four digits in length, 555 is an illegal beacon code; 0555 is legal.

## 2.6.4 Transponder Commands

These commands allow a user to change an enable/disable certain transponder functions of an Aircraft.

### 2.6.4.1 Transponder Command

These commands change the operation status of an Aircraft's Transponder.

<b>Command Syntax</b>	
XP ON/OFF	Toggles the Aircraft's transponder on and off.

### 2.6.4.2 Mode Commands

These commands change the operation status of the Mode an Aircraft's Transponder.

<b>Command Syntax</b>	
XP +/-MODEC	Toggles the Aircraft's ModeC on and off
XP +/-MODES	Toggles the Aircraft's ModeS on and off

Limitations:

- Aircraft's Transponder must be cable of using given Mode.

## 2.7 Hold Commands

Hold commands cause an Aircraft to go into a holding pattern and await further instructions.

Hold Commands
Holding Fix
Hold Present Position

### 2.7.1 Holding at a Fix

The holding command guides an Aircraft into a holding pattern until the Aircraft is either 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.

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.

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

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
<p>“Hold at SELL on the Three One Zero Radial, one minute right turns.”</p>	<p>UAL163 HL SELL 310 T1</p>

## 2.7.2 Holding at Present Position

The hold present position command guides an Aircraft into a holding pattern around its present position. The Aircraft will continue holding until the Aircraft is either vectored out or put onto a non-radar route.

For example: HPP 180

Upon entering the “HPP” command, the Aircraft will fly for ten seconds before entering a hold at its present position (holding point/ clearance limit). The Aircraft will commence a 180-degree right turn to its outbound course. Upon completion of this turn, the Aircraft will fly 2 minutes on its outbound course. The Aircraft will then commence another 180-degree right turn to its inbound course. Upon completion of this turn, the Aircraft will fly 2 minutes on its inbound course to return to its former present position (holding point/clearance limit) where the procedure will be repeated.

<b>Command Syntax</b>	
HPP	Hold an Aircraft at its present position.
The following parameters are optional:	
Heading	<b>Heading</b> is the outbound heading from the holding point in degrees. The default is the Aircraft’s current magnetic heading minus 180 degrees if not specified.
Tleg_length or Dleg_length	<b>T</b> is a time-based leg where the leg_length is in minutes. The default is <b>2</b> minutes if not specified.
Turn	<b>D</b> is distance-based leg where the leg_length is in nautical miles. The default is <b>2</b> nautical miles if not specified.  If <b>T</b> or <b>D</b> are not specified, the default is a <b>time based leg</b> of <b>2</b> minutes  <b>Turn</b> is the turn direction, either <b>LEFT</b> or <b>RIGHT</b> . The default is to turn <b>Right</b> if not specified.

**Examples:**

*Note:*

- *The instruction to “hold at you your present position” is not contained in the FAA ORDER 7110.65, Air Traffic Control. Therefore, phraseology issued by a controller may differ from the examples given in this document.*
- *The controller may optionally say hold at your present position.*

*Controller Phraseology:* American Ninety-Five hold at your present position  
*Command Entry:* AAL95 HPP

*Controller Phraseology:* US Air Thirty-Seven hold present position left turns  
*Command Entry:* USA37 HPP LEFT

*Controller Phraseology:* Delta One Hundred hold present position five minute legs  
*Command Entry:* DAL100 HPP T5

*Controller Phraseology:* North West Air Seven Eleven hold at your present position  
twenty-mile legs, left turns  
*Command Entry:* NWA711 HPP D20 Left

*Controller Phraseology:* Frontier Flight One Twelve hold at your present position  
twenty-five mile legs  
*Command Entry:* FFT112 HPP D25

*Controller Phraseology:* Gulfstream Seven Hundred Sierra Papa hold at your present  
position, thirty-mile legs, left turns.  
*Command Entry:* N700SP HPP D30 LEFT

## 2.8 Informative Commands

Informative Commands convey information about Aircraft's equipment, current winds, and command usage.

Informative Commands
Equipment
Help
Winds

### 2.8.1 Equipment

Displays the following information about an Aircraft's equipage:

- The Aircraft's on board navigation equipment when entered. (FMS, GPS, VOR-DME, or no-navigation will be displayed in the Pilot Messages Panel.) Note: 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.
- What the Aircraft's equipment code means.
- ADS-B capabilities
- ADS-B Link capabilities
- ADS-B equipment's status
- ADS\_B ICAO identifier (if any)

Command Syntax	
EQ (or EQUIP)	Displays information about an Aircraft's equipage.

Example Command	Sample Text
UAL163 EQ	UAL163 Equipment Nav Model: *GPS, Ac Equip: TACAN, Adsb: Both, Asdb Link: Both, Asdb Status On
UAL163 EQUIP	

## 2.8.2 Help

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	
? (or HELP) <i>command</i>	Displays the proper syntax for the given command. <i>Command</i> is a Simulation Pilot command such as A, MT, TO, etc.

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

## 2.8.3 Winds

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 Aircraft's 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

## 2.9 Terminal Commands

Unique Commands
Change Airport
Change Runway
Descend Via the Glide Slope
Intercept Localizer
Missed Approach
SID
STAR
Takeoff
Terminal Descent
Touch and Go

### 2.9.1 Change Arrival Airport

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.

## 2.9.2 Change Arrival Runway

The Change Runway command allows the user to change the assigned landing runway for a particular Aircraft. The command only accepts runways that are defined for the Aircraft's assigned airport. **Note:** For Aircraft with a ground arrival route the route will be changed to use the new arrival runway.

Command Syntax	
RWY or (ARRRWY) nnn	Change the Aircraft's assigned arrival runway-to-runway nnn. nnn must be a valid runway name for the Aircraft's assigned airport. <b>WARNING:</b> If an Aircraft with a ground arrival route, then issuing this command will cause the Aircraft to alter its ground arrival route.

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

### Limitations:

- The commanded runway must exist at the Aircraft's arrival airport.

## 2.9.3 Descend Via the Glide Slope

The DGS command causes the Aircraft to descend via an Aircraft's arrival runway's glide slope.

Command Syntax	
DGS	Descend via the Aircraft's arrival runway's glide slope.

Example Controller Phraseology	Example Command Response
No Controller Phraseology	AAL123 DGS

### Limitations:

- The Aircraft must have an arrival runway assigned.

## 2.9.4 Intercept Localizer

The LOC command causes the Aircraft to intercept the localizer at its arrival runway.

**Note:** Aircraft will not descend or land unless given a approach clearance command.

Command Syntax	
LOC	Intercept the localizer at the Aircraft's arrival runway.

Example Controller Phraseology	Example Command Response
“Turn left Zero Nine Zero maintain Altitude One Five Zero feet until established on the localizer.”	UAL163 LOC (Note: Assuming that left turn and altitude were previously entered.)

### Limitations:

- The Aircraft must have an arrival runway assigned.

## 2.9.5 Land Mid-Field

The Land Mid-Field command causes an Aircraft on an approach pattern to land midway down its arrival runway.

<b>Command Syntax</b>	
MFL	Causes Aircraft on an approach pattern to land midway down its arrival runway.
MFL ppp	Causes Aircraft on approach pattern to land given percentage ppp down the runway.

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
No Controller Phraseology	UAL163 MFL (Note: Assuming that clearance to land was issued previously.)
No Controller Phraseology	AAL123 MFL 030 (Note: Assuming that clearance to land was issued previously.)

### **Limitations:**

- Aircraft must have a valid arrival Airport and Runway.
- Aircraft must already be on a valid approach pattern to its arrival Airport and Runway.
- The percentage given (if any) must be valid.

## 2.9.6 Missed Approach

This command executes a missed approach for an Aircraft. The Aircraft will follow the missed approach procedure defined to the approach it was following. If there is no missed approach procedure defined, then 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 (or GA)	Execute a missed approach

Example Controller Phraseology	Example Command Response
“Execute a missed approach.” <i>(Note: This is given in a more panic stricken voice.)</i>	UAL163 MA <b>Or</b> UAL163 GA

### Limitations:

- Aircraft must have been cleared for approach.

## 2.9.7 SID (Standard Instrument Departure)

The SID command gives a user 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
“Day Ten Departure ”	UAL163 SID DAY10.ARNES
“Day Ten Departure, Arnes Transition”	UAL163 SID DAY10.ARNES

### Limitations:

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

### 2.9.7.1 Intercept a SID using a radial

An Aircraft can intercept a SID using a Radial

Command Syntax	
SID radial.fix.sid[.eee]	Intercept SID sid using the given Radial radial off of the given Fix fix. Can optionally give where exit the SID at using eee.

Example Controller Phraseology	Example Command Response
“Intercept The PYE One Three Five Radial, Resume PORTE4 Departure”	UAL163 SID 135.PYE.PORTE4  (Assuming on intercept heading to the PYE 135 Radial)

## 2.9.8 STAR (Standard Terminal Arrival Route) Commands

The STAR commands cause an Aircraft to follow a STAR route. Depending whether which command is entered an Aircraft may or may not perform vertical restrictions.

### Limitations:

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

### 2.9.8.1 Descend STAR

The STAR command gives a user 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. The STAR Command causes an Aircraft to follow the given STAR route and perform all vertical, lateral, and speed restrictions on the route.

<b>Command Syntax</b>	
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.

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
“Descend via PDZ1 Arrival”	UAL163 STAR TNP.PDZ1
“Descend via the PDZ1 Arrival to LAX.”	UAL163 STAR TNP.PDZ1 LAX
“Cleared via the PDZ1 Arrival and comply with all restrictions”	UAL163 STAR TNP.PDZ1

### 2.9.8.2 Cleared STAR

The CSTAR command gives a user the mechanism to load the STAR restrictions for a particular arrival route. The CSTAR is described in the procedure name for the desired arrival. The procedure name must be included when this command is used. The CSTAR Command causes an Aircraft to follow the given STAR route and ignore all lateral and speed restrictions on the route.

<b>Command Syntax</b>	
CSTAR aaa.bbb	Change route to STAR route bbb taking Transition route aaa.
CSTAR aaa.bbb apt	Change route to STAR route bbb taking Transition route aaa to Airport apt.

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
“Cleared via the PDZ1 Arrival”	UAL163 CSTAR TNP.PDZ1
“Cleared via the PDZ1 Arrival to LAX.”	UAL163 CSTAR TNP.PDZ1 LAX

### 2.9.9 Take Off

The following commands will cause an Aircraft to takeoff or start.

#### 2.9.9.1 Take off immediately

The Rolling Take Off command will cause an Aircraft that is either proposed to departure or holding at an airport to take off. **Note:** There may be a delay between the command’s execution and the Aircraft starting its Takeoff roll.

<b>Command Syntax</b>	
RTO	Causes an Aircraft (either a proposed departure or on hold at an airport) to immediately take off.

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
“Cleared For Rolling Takeoff On Runway 13”	UAL163 RTO

### 2.9.9.2 Take off with potential delay

The Take Off command will cause an Aircraft that is either proposed to departure or holding at an airport to take off. **Note:** There may be a delay between the command's execution and the Aircraft starting its Takeoff roll.

<b>Command Syntax</b>	
TO	Causes an Aircraft (either a proposed departure or on hold at an airport) to take off. There may be a delay between the command execution and the Aircraft starting its Takeoff roll.

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
“Cleared For Takeoff On Runway 13”	UAL163 TO
“Expedite Takeoff”	UAL163 S40; TO

### 2.9.10 Terminal Descent

The Terminal Descent Command allows the user to change how an Aircraft descends and decelerates. Turning on Terminal Descent lets the Aircraft use the landing drag devices as necessary for descent and deceleration.

<b>Command Syntax</b>	
TD ON	Allows Aircraft to use landing drag devices settings as necessary to maintain descent and deceleration.
TD OFF	Resume use of normal drag device settings.

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
No Controller Phraseology	UAL163 TD ON
No Controller Phraseology	UAL163 TD OFF

#### Limitations:

- The commanded only effects the way an Aircraft decelerates and descends.

### 2.9.11 Touch and Go

This command causes an Aircraft to execute a touch-and-go approach on the Aircraft's arrival runway.

<b>Command Syntax</b>	
TNGO	Causes an Aircraft to execute a touch-and-go approach on the Aircraft's arrival runway.

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
Cleared touch-and-go runway one seven right	TNGO (Assumes 17R is the Aircraft's arrival runway.)

#### **Limitations:**

- The Aircraft the command is given to must have a valid arrival runway and airport and on approach.
- If the Aircraft is not given any instructions after it has departed the airport, then the Aircraft will continue to fly in a straight line.
- TGF uses information from an Airport with TGF Ground capabilities to do calculations for this command.

## 2.10 Unique Commands

All unique commands require checking of Aircraft states and implementation of other commands based upon certain pre-existing conditions. These commands consist of cross, at position, then, follow, and join.

Unique Commands
Alter Decent and Deceleration Profile
At Altitude
At IAS Speed
At Position
At Time
Change Flight Rules
Crossing Restrictions
File New Flight Plan
Follow
Join Group
Prompt/Alert
Start
Terminate Flight
Then

### 2.10.1 At Altitude

This command causes an Aircraft when it reaches the given altitude to perform the given action.

Command Syntax	
@A alt command	At the Altitude alt perform command. Altitude is in hundreds of feet

#### Limitations:

- A valid altitude must be given.
- A valid command must be given.

#### Examples:

*Notes:*

- *The instruction to at altitude is not contained in the FAA ORDER 7110.65, Air Traffic Control. Therefore, phraseology issued by a controller may differ from the examples given in this document.*

*Controller Phraseology:* “American one two zero upon reaching flight-level one niner zero cleared direct to HAPPY”

*Command Entry:* AAL120 @ A190 DIR HAPPY (Assuming Aircraft is already cleared to flight level 190)

*Controller Phraseology:* “American one two zero upon passing/climbing through/descending through flight-level two one zero cleared direct to GROVE”

*Command Entry:* AAL120 @A210 DIR GROVE (Assuming Aircraft is already descending below/climbing above flight level 210)

## 2.10.2 At IAS Speed

This command causes an Aircraft when it reaches the given indicated airspeed (IAS) to perform the given action.

<b>Command Syntax</b>	
@S spd command	At the IAS speed spd perform command. Speed is in knots

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
No Controller Phraseology	UAL163 @S 210 DIR HAPPY

### **Limitations:**

- A valid IAS speed must be given.
- A valid command must be given.

### 2.10.3 At Position

This command causes an Aircraft when it reaches the given Position to perform the given action.

Command Syntax	
@ fix command	At the given fix perform command.
@ frd command	At the given fix radial distance (frd) perform command.
@ apt command	At the given airport perform command.
@ lat/lon command	At the given latitude and longitude perform command.

#### Limitations:

- A valid fix, airport, fix radial distance, or latitude and longitude must be given
- The fix, airport, fix radial distance, or latitude and longitude given must be on the Aircraft's current route.
- A valid command must be given.

#### Examples:

##### Notes:

- *The instruction to at a position is not contained in the FAA ORDER 7110.65, Air Traffic Control. Therefore, phraseology issued by a controller may differ from the examples given in this document.*

*Controller Phraseology:* Delta Fifty-Five at GENERA descend and maintain flight level two two zero.

*Command Entry:* DAL55 @ GEN A220

*Controller Phraseology:* United one sixty-three at latitude 28-25-44.000N and longitude 081-18-57.200W descend and maintain flight level one one zero.

*Command Entry:* UAL163 @ 28-25-440N/081-18-57.200W A110

## 2.10.4 At Time

This command causes an Aircraft when it reaches the Simulation Time to perform the given action.

Command Syntax	
@T time command	At the given simulation time perform command. The simulation time is in the format of HH:MM:SS.sss.

### Limitations:

- A valid time must be given.
- A valid command must be given.

### Examples:

#### Notes:

- *The instruction to at a time is not contained in the FAA ORDER 7110.65, Air Traffic Control. Therefore, phraseology issued by a controller may differ from the examples given in this document.*

*Controller Phraseology:* American one two zero at twelve fifteen Zulu climb and maintain one niner zero”.

*Command Entry:* AAL120 @T 12:15 A190

## 2.10.5 At Relative Time

This command causes an Aircraft when it reaches a relative Simulation Time to perform the given action.

Command Syntax	
@T +time command	At current Simulation time plus given time perform command. The time is in the format of HH:MM:SS.sss.

### Limitations:

- A valid time must be given.
- A valid command must be given.

### Examples:

#### Notes:

- *The instruction to at a time is not contained in the FAA ORDER 7110.65, Air Traffic Control. Therefore, phraseology issued by a controller may differ from the examples given in this document.*

*Controller Phraseology:* American one two zero at twelve fifteen Zulu climb and maintain one niner zero”. **Note:** Assuming that twelve fifteen Zulu is five minutes from the current time.

*Command Entry:* AAL120 @T +00:05:00 A190

## 2.10.6 Change Flight Rules

This command allows the user to mark a flight as following Visual Flight Rules (VFR). The data tag symbol for VFR flights on TGF's PVD is an eye. **Note: There is no change to way TGF treats the flight.**

Command Syntax	
VFR ON	Flight is flying under Visual Flight Rules (VFR)
VFR OFF	Flight is flying under Instrument Flight Rules (IFR)

In Figure 5, AAL4148 is a VFR flight while FDX1813 is an IFR flight.

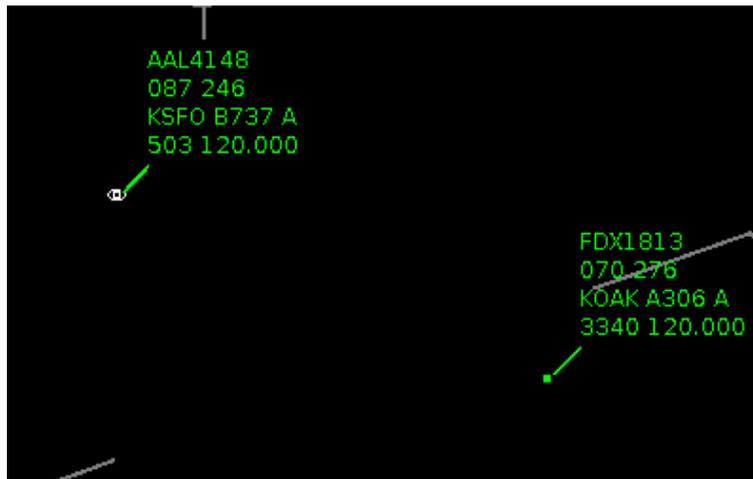


Figure 5 VFR Sample

Example Controller Phraseology	Example Command Response
No Controller Phraseology	UAL163 VFR ON
No Controller Phraseology	UAL163 VFR OFF

## 2.10.7 Crossing Restrictions Commands

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.

### 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.

### 2.10.7.1 Speed Crossing Restrictions

The crossing command may specify a speed at which to cross a fix/waypoint.

Command Syntax	
CRS xxx Ssss	Cross waypoint xxx at sss. xxx is a valid waypoint/NAVAID name. sss is a
X xxx Ssss	Change Speed command.

Example Controller Phraseology	Example Command Response
“Cross Sweet at Two Five Zero Knots.”	UAL163 CRS SWEET S250
	UAL163 X SWEET S250

### 2.10.7.2 At Time Crossing Restriction

The crossing command may specify a time at which to cross a fix/waypoint.

Command Syntax	
CRS xxx @T t	Cross waypoint xxx at time. xxx is a valid waypoint/NAVAID name. t is a
X xxx @T t	valid simulation time.

Example Controller Phraseology	Example Command Response
“Cross Sweet at twelve eleven Zulu.”	UAL163 CRS SWEET @T 12:11
	UAL163 X SWEET @T 12:11

### 2.10.7.3 At Altitude Crossing Restriction

The crossing command may specify an exact altitude to cross a fix/waypoint. A speed or time restriction may be issued simultaneously with the altitude restriction.

Once the Aircraft is past the restricted fix/waypoint the Aircraft will remain at the specified altitude until otherwise instructed.

<b>Command Syntax</b>	
CRS xxx Aaaa X xxx Aaaa	Cross waypoint xxx at aaa. xxx is a valid waypoint/NAVAID name. aaa is a Change Altitude.
CRS xxx Aaaa Ssss X xxx Aaaa Ssss	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.
CRS xxx Aaaa @T t X xxx Aaaa @T t	Cross waypoint xxx at Time t and at altitude aaa. aaa is a Change Altitude command. @T t is At Time command.

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
“Cross Sweet at One Zero Thousand Feet.”	UAL163 CRS SWEET A100  UAL163 X SWEET A100
“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 Twelve Fifteen Zulu at One Five Zero.”	UAL163 CRS SWEET A150 @T 12:15  UAL163 X SWEET A150 @T 12:15

#### 2.10.7.4 At or Above/Below Altitude Crossing Restriction

The crossing command may specify an at-or-above or an at-or-below altitude restriction for the fix/waypoint. A speed or time restriction may be issued simultaneously with the altitude restriction.

At or above/below altitude crossing restrictions are a temporary altitude change, once an Aircraft is past the restricted fix/waypoint the Aircraft will return to its original target altitude. For example if an Aircraft flying level at flight level 200 is given a command to cross BAASS at or below flight level 180. The Aircraft will attempt to cross BAASS at or level 180, however once the Aircraft is past BAASS it will start to climb back to flight level 200.

If a speed is given with the at or above/below crossing restriction it is considered a permanent change, so once an Aircraft is past the restricted fix/waypoint the speed restriction will remain in effect. For example if an Aircraft flying level at flight level 200 at 290 knots indicated is given a command to cross BAASS at or below flight level 180 at 250 knots indicated. The Aircraft will attempt to cross BAASS at flight level 180 and 250 knots indicated, however once the Aircraft is past BAASS it will start to climb back to flight level 200 at 250 knots.

<b>Command Syntax</b>	
CRS xxx AOAaaa CRS xxx AAaaa X xxx AOAaaa X xxx AOAaaa	Cross waypoint xxx at or above aaa. xxx is a valid waypoint/NAVAID name. aaa is a Change Altitude.
CRS xxx AOBaaa CRS xxx ABaaa X xxx AOBaaa X xxx ABaaa	Cross waypoint xxx at or below aaa. xxx is a valid waypoint/NAVAID name. aaa is a Change Altitude.
CRS xxx AOAaaa Ssss CRS xxx AAaaa Ssss X xxx AOAaaa Ssss X xxx AAaaa Ssss	Cross waypoint xxx at or above aaa and at sss. xxx is a valid waypoint/NAVAID name. aaa is a Change Altitude command. sss is a Change Speed command.

<b>Command Syntax</b>	
CRS xxx AOBaaa Ssss CRS xxx ABaaa Ssss X xxx AOBaaa Ssss X xxx ABaaa Ssss	Cross waypoint xxx at or below aaa and at sss. xxx is a valid waypoint/NAVAID name. aaa is a Change Altitude command. sss is a Change Speed command.
CRS xxx AOAAAA @T t CRS xxx AAAaa @T t X xxx AOAAAA @T t X xxx AAAaa @T t	Cross waypoint xxx at or above Time t at altitude aaa. AOAAAA is a Change Altitude command. @T t is At Time command.
CRS xxx AOBaaa @T t CRS xxx ABaaa @T t X xxx AOBaaa @T t X xxx ABaaa @T t	Cross waypoint xxx at or below Time t at altitude aaa. AOBaaa is a Change Altitude command. @T t is At Time command.

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
“Cross Sweet at or above One Two Thousand Feet.”	UAL163 CRS SWEET AOA120  UAL163 X SWEET AOA120
“Cross Sweet at or below One Five Thousand Feet.”	UAL163 CRS SWEET AOB150  UAL163 X SWEET AOB150
“Cross Sweet at or above One Two Thousand Feet at Two Five Zero Knots.”	UAL163 CRS SWEET AOA120 S250  UAL163 X SWEET AOA120 S250
“Cross Sweet at or below One Five Thousand Feet at Two Five Zero Knots.”	UAL163 CRS SWEET AOB150 S250  UAL163 X SWEET AOB150 S250
“Cross Sweet at or above Twelve Fifteen Zulu at One Five Zero.	UAL163 CRS SWEET AOA150 @T 12:15  UAL163 X SWEET AOA150 @T 12:15
“Cross Sweet at or below Twelve Fifteen Zulu at One Five Zero.	UAL163 CRS SWEET AOB150 @T 12:15  UAL163 X SWEET AOB150 @T 12:15

## 2.10.8 File New Flight Plan

This command will cause an Aircraft to file a new flight plan. **Note: This Command should be used with care as TGF end of route logic will be applied once the Aircraft reaches the end of this new flight plan.**

Command Syntax	
FILE rrr	Causes an Aircraft to file a new flight plan using the route rrr given. This route must be valid.
The following parameters are optional:	
Aaaa	<b>A</b> is the Aircraft's target altitude where aaa is the altitude in hundreds of feet. The default altitude is 4,000 ft.
Bcode	<b>B</b> is the beacon code the Aircraft should use where code is a valid octal beacon code. The default is to keep the Aircraft's old beacon code.
Ssss	<b>S</b> is the Aircraft's target indicated airspeed where sss is in knots. The default is 250 knots.

Example Controller Phraseology	Example Command Response
No Controller Phraseology	FILE BAASS..HAPPY
No Controller Phraseology	FILE BASS..HAPPY A230 S250 B6565

### Limitations:

- Route given must be valid.
- If an altitude is given it must be valid.
- If a speed is given it must be valid.
- If a beacon code is given it must be valid.

## 2.10.9 Follow

The Follow command guides an Aircraft to follow behind a lead Aircraft. The Aircraft will continue to follow the lead Aircraft until the Aircraft doing the following is given one of the following commands:

- Turn
- Route
- Heading
- Resume
- Hold
- Cross
- Speed
- Altitude
- Join
- Follow

**Note: Currently this command is disabled.**

For example: FOLLOW NWA711 5

The Aircraft will follow 5 nautical miles behind North West Air Seven Eleven.

Command Syntax	
Follow (or FLW)	Follow a given Aircraft.
LeadAcid	<b>LeadAcid</b> is the call sign/Aircraft ID of the Aircraft to follow.
The following parameters are optional:	If no distance or time is specified then the default is to follow and maintain its current distance behind the lead Aircraft.
Distance	<b>Distance</b> is a distance in nautical miles to follow behind the lead Aircraft.
Or	
Time	<b>Time</b> is a time in <i>MM:SS</i> to follow behind the lead Aircraft.

**Limitations:**

- The lead Aircraft ID given must be an active Aircraft in the simulation. If the lead Aircraft ID given is not for an active Aircraft in the simulation then the command will be rejected.
- If the Aircraft issued the command is too far from the lead Aircraft, then the command will be rejected. Currently, a following Aircraft is considered too far from a lead Aircraft if the following Aircraft must speed-up or slow down more than 20% to meet the following restriction.
- An Aircraft cannot follow a group id due to the fact that the position of the group id can change drastically based on the group's configuration.

**Examples:**

*Note:*

- *The instruction to “follow” is not contained in the FAA ORDER 7110.65, Air Traffic Control. Therefore, phraseology issued by a controller may differ from the examples given in this document.*

*Controller Phraseology:* American Ninety-Five follow Frontier Flight One Twelve.

*Command Entry:* AAL95 FOLLOW FFT112

*Controller Phraseology:* North West Air Five Zero Three follow United Three Zero Eight maintain ten miles lateral separation.

*Command Entry:* NWA503 FLW UAL308 10

*Controller Phraseology:* United Thirty-Seven follow Delta One Hundred five minutes in trail.

*Command Entry:* USA37 FOLLOW DAL100 05:00

*Controller Phraseology:* Gulfstream Seven Hundred Sierra Papa follow Delta One Hundred maintain current lateral separation.

*Command Entry:* N700SP FLW DAL100

### 2.10.10 Join Group

The Join Group command causes an Aircraft to join a given group of Aircraft. The following commands will cause an Aircraft to break out of a group:

- Turn
- Route
- Heading
- Resume
- Hold
- Cross
- Speed
- Follow
- Join

An individual Aircraft in a group can be given the following commands:

- Term
- Ident
- Squawk
- Altitude

All other Commands are ignored by the individual Aircraft in a group.

For example: JOIN GROUP1

The Aircraft would join a group called GROUP1.

**Note: Currently this command is disabled.**

Command Syntax	
JOIN GroupID	Join the given group. <b>GroupID</b> is the name of the group the Aircraft should join.

#### Limitations:

- A group cannot be named after an Aircraft in the simulation.
- One group cannot join another group.
- Only TGF controlled EnRoute Aircraft can join a group.
- Groups will ignore prepare and cleared for approach commands.

#### Example:

*Note:*

- *The instruction to “Join Group” is not contained in the FAA ORDER 7110.65, Air Traffic Control. Therefore, phraseology issued by a controller may differ from the example given in this document.*

*Controller Phraseology:* US Air Thirty-Seven Join Group2  
*Command Entry:* USA37 JOIN GROUP2

## **2.10.11 Send Message to Aircraft's Pilot**

The following commands send a non-Datalink message to a SimPilot Workstation of an Aircraft.

### **2.10.11.1 Alert**

The Alert command sends a message to a SimPilot Workstation (SPW) of an Aircraft. The message displays in a flashing Window that the user must click on to get rid of.

<b>Command Syntax</b>	
ALERT message	Sends a flashing message to the SPW an Aircraft is assigned to.

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
No controller phraseology	UAL163 ALERT Notify Controller of turbulence

#### **Limitations:**

- A SPW must be assigned to the Aircraft that the alert command was given for.

### 2.10.11.2 Prompt

The Prompt command sends a message to a SPW of an Aircraft.

Command Syntax	
PROMPT message	Sends a message to the SPW 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 SPW must be assigned to the Aircraft that the prompt command was given for.

### 2.10.12 Start

The START command causes a pending Aircraft in the simulation to start.

Command Syntax	
START	Starts a pending Aircraft.

Example Controller Phraseology	Example Command Response
No Controller Phraseology	UAL163 START

### 2.10.13 Then

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

<b>Command Syntax</b>	
cmd1 THEN cmd2	After Cmd1 has occurred perform Cmd2.
cmd1 T cmd2	
cmd1 > cmd2	

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
“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

### 2.10.14 Terminate Flight

The Terminate command will cause an Aircraft to terminate.

<b>Command Syntax</b>	
TERM	Terminates a given flight

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
No Controller Phraseology	UAL163 TERM

## 2.11 Ground Commands

All ground commands require that an Aircraft be on the ground and have a valid ground route. These commands consist of change taxi route, hold at, and hold short.

Ground Commands
Change Departure Runway
Taxi and Rerouting
Ground Hold
Refuel
Remove Ground Hold
Resume Taxiing
Stop

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

### 2.11.1 Change Departure Runway

This command changes the runway from which an Aircraft on the ground will depart an airport.

Command Syntax	
RWY or (DPTRWY) rwy	Change an Aircraft's departure runway to rwy. <b>WARNING:</b> this command will cause the Aircraft's ground route to change to go to the new departure runway.

Example Controller Phraseology	Example Command Response
"Runway two seven left"	UAL747 DPTRWY 27L
"Runway one six right"	UAL747 RWY 16R

#### Limitations:

- The commanded runway must exist at the Aircraft's departure airport.
- Aircraft must have a valid ground route.
- Aircraft must be departing the airport.

## 2.11.2 Taxi and Rerouting

Both the Taxi and the Rerouting command will change an Aircraft's current ground route. However, the Rerouting command will not cause an Aircraft currently stopped for some reason to start moving while the Taxi command will. These commands generate a new route on the ground for an Aircraft.

<b>Command Syntax</b>	
REROUTE (or RR) location	The Aircraft will create a ground route that will take it to the given location. If the Aircraft is stopped then it will wait for instructions to begin moving.
REROUTE (or RR) ground route	The Aircraft will change its ground route to the one given. If the Aircraft is stopped then it will wait for instructions to begin moving.
TAXI (or TX) location	The Aircraft will create a ground route that will take it to the given location. The Aircraft will immediately start following the new ground route.
TAXI (or TX) ground route	The Aircraft will change its ground route to the one given. The Aircraft will immediately start following the new ground route.

Example Controller Phraseology	Example Command Response
No Controller Phraseology	AAL123 RR G155  or  AAL123 REROUTE G155
“Expect taxi via Alpha”	AAL123 RR A  or  AAL123 REROUTE A
“Hold Position. Change to Runway Two Seven Left. Hold Position.”	AAL123 RR 27L  or  AAL123 REROUTE 27L
“Expect taxi via Bravo and Charlie and Delta”	AAL123 RR B.C.D  or  AAL123 REROUTE B.C.D
No Controller Phraseology	AAL123 RR G143.G144.G145  or  AAL123 REROUTE G143.G144.G145
No Controller Phraseology	AAL123 TX G155  or  AAL123 TAXI G155
“Taxi via Alpha”	AAL123 TX A  or  AAL123 TAXI A
“Taxi Runway Two Seven Left”	AAL123 TX 27L  or  AAL123 TAXI 27L

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
“Taxi via Bravo and Charlie and Delta”	AAL123 TX B.C.D  or  AAL123 TAXI B.C.D
No Controller Phraseology	AAL123 TAXI G143.G144.G145  or  AAL123 TAXI G143.G144.G145

**Limitations:**

- The location must be a valid ground fix, taxiway, or runway.
- The ground route given must be valid.

**2.11.2.1 Taxiing and Rerouting Via Route**

The via command specifies the ground route an Aircraft will take to get to a given location.

<b>Command Syntax</b>	
REROUTE (or RR) location VIA ground route	The Aircraft will use the given route to get to the given location. If the Aircraft is stopped then it will wait for instructions to begin moving.
TAXI (or TX) location VIA ground route	The Aircraft will use the given route to get to the given location. The Aircraft will immediately start following the new ground route.

Example Controller Phraseology	Example Command Response
No Controller Phraseology	AAL123 RR G155 VIA G153.G154  or  AAL123 REROUTE G155 VIA G153.G154
“Expect taxi via Alpha Via Charlie”	AAL123 RR A VIA C  or  AAL123 REROUTE A VIA C
“Expect Runway Two Seven Left via Echo”	AAL123 RR 27L VIA E  or  AAL123 REROUTE 27L VIA E
No Controller Phraseology	AAL123 TX G155 VIA G153.G154  or  AAL123 TAXI G155 VIA G153.G154
“Taxi via Alpha and Charlie”	AAL123 TX A VIA C  or  AAL123 TAXI A VIA C
“Taxi to Runway Two Seven Left via Echo”	AAL123 TX 27L VIA E  or  AAL123 TAXI 27L VIA E

**Limitations:**

- The location must be a valid ground fix, taxiway, or runway.
- The ground route given must be valid.
- The ground route given must end at the given location.

### 2.11.2.2 Specify Direction to Go

The controller can specify whether to turn left/right onto/off of a taxiway

<b>Command Syntax</b>	
!R taxiway	Take the right off of the given taxiway.
!L taxiway	Take the left off of the given taxiway.
R: taxiway	Take the right onto the given taxiway.
L: taxiway	Take the left onto the given taxiway.

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
“Expect taxi via Alpha turn right off of Bravo and taxi Charlie”	AAL123 RR A.!R.B.C
“Expect taxi via Papa turn left off of Sierra and taxi Tango”	AAL123 RR P.!L.S.T.
“Expect taxi via Echo and turn right onto Foxtrot”	AAL123 RR E.R:.F
“Expect taxi via Victor and turn left onto Whiskey”	AAL123 RR V.L:.W
“Taxi via Alpha and turn right off of Bravo and taxi Charlie”	AAL123 TX A.!R.B.C
“Taxi via Papa and turn left off of Sierra and taxi Tango”	AAL123 TX P.!L.S.T.
“Taxi via Echo and turn right onto Foxtrot”	AAL123 TX E.R:.F
“Taxi via Victor and turn left onto Whiskey”	AAL123 TX V.L:.W

#### **Limitations:**

- The taxiway given must be valid.
- The direction given must be supported by the taxiway.

### 2.11.3 Ground Hold Commands

The ground hold commands cause an Aircraft on the ground to cease moving and await further instructions.

Ground Hold Commands
Hold At
Hold Short
Get into Takeoff Position and Hold

#### 2.11.3.1 Hold At

The hold at command causes an Aircraft to stop taxiing at a given fix.

Command Syntax	
HA fix	Causes an Aircraft to stop taxiing at Fix fix and await further instructions.

Example Controller Phraseology	Example Command Response
No Controller Phraseology	UAL747 HA G108

#### Limitations:

- The fix given must be a valid fix on the Aircraft's current ground route.

### 2.11.3.2 Hold Short

The hold short command causes an Aircraft to stop taxiing before a given location.

<b>Command Syntax</b>	
HS fix	Causes an Aircraft to stop taxiing before Fix fix and await further instructions.
HS taxiway	Causes an Aircraft to stop taxiing before Taxiway taxiway and await further instructions.
HS runway Or HS RWY runway	Causes an Aircraft to stop taxiing before Runway runway and await further instructions.

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
No Controller Phraseology	UAL747 HS G108
“Hold short of Taxiway Alpha”	UAL747 HS A
“Hold short of runway two one left”	UAL747 HS 21L
“Hold short of runway one eight”	UAL747 HS RWY 18

#### **Limitations:**

- The location given must be a valid fix, runway, or taxiway on the Aircraft’s current ground route.

### 2.11.3.3 Get into Takeoff Position and Hold

The get into takeoff position and hold command causes an Aircraft to follow its ground route to its departure runway. Once at its departure runway it will taxi onto the runway getting into takeoff position and await further instructions.

<b>Command Syntax</b>	
PH (or LW)	Causes an Aircraft to follow its ground route to its departure runway once at its departure runway it will taxi onto the runway getting into takeoff position and await further instructions.

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
“Runway two seven left, position and hold”	USA23 PH ( <i>Note: Assuming Aircraft is already departing airport via Runway 27L. This phraseology has been replaced by line up and wait.</i> )
“Runway two seven right, line up and wait”	USA23 LW ( <i>Note: Assuming Aircraft is already departing airport via Runway 27R</i> )

#### **Limitations:**

- The Aircraft must have a departure runway and its current ground route must end at on it.

## 2.11.4 Refuel

This command will refuel an Aircraft while it is on the ground.

<b>Command Syntax</b>	
PS or REFUEL www	Cause an Aircraft to be re-fueled with www pounds of fuel.
PS or REFUEL Pppp	Cause an Aircraft to be re-fueled with given ppp percentage of its current fuel.

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
No Controller Phraseology	UAL123 PS 75 or UAL123 REFUEL 75
No Controller Phraseology	UAL123 PS P40 or UAL123 REFUEL P40

### **Limitations:**

- Can only be given to Aircraft on the ground.
- The Aircraft will **not** be allowed to taken on more weight than the Aircraft's maximum takeoff weight.

## 2.11.5 Remove Ground Hold

These commands remove a ground hold on an Aircraft's ground route.

<b>Remove Ground Hold Commands</b>
Cross Ground Fix
Cross Runway
Cross Taxiway

### 2.11.5.1 Cross Ground Fix

The cross fix command causes an Aircraft to remove the next hold on its current ground route involving a fix.

<b>Command Syntax</b>	
CF	Causes an Aircraft to remove the next hold on its current ground route involving a fix.

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
No Controller Phraseology	AAL747 CF

### 2.11.5.2 Cross Runway

The cross runway command causes an Aircraft to remove the next hold on its current ground route involving a runway.

<b>Command Syntax</b>	
CR	Causes an Aircraft to remove the next hold on its current ground route involving a runway.

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
“Cross Runway Two Eight Left”	AAL747 CR ( <i>Note: Assumes next ground hold on runway on the Aircraft’s route involves runway 28L.</i> )
“Proceed across One Four Right”	AAL747 CR ( <i>Note: Assumes next ground hold on runway on the Aircraft’s route involves runway 14R.</i> )

### 2.11.5.3 Cross Taxiway

The cross taxiway command causes an Aircraft to remove the next hold on its current ground route involving a taxiway.

<b>Command Syntax</b>	
CT	Causes an Aircraft to remove the next hold on its current ground route involving a taxiway.

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
“Cross Taxiway Echo”	AAL747 CT ( <i>Note: Assumes next ground hold on taxiway involves taxiway E.</i> )
“Cross Bravo”	AAL747 CT ( <i>Note: Assumes next ground hold on taxiway involves taxiway B.</i> )

### 2.11.6 Resume Taxiing

The resume taxiing command causes an Aircraft that is currently stopped due to the need for further instructions to resume following its current ground route.

<b>Command Syntax</b>	
RT	Causes an Aircraft that is currently stopped due to the need for further instructions to resume following its current ground route

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
“Continue taxiing”	AAL747 RT

#### **Limitations:**

- Aircraft will not resume taxiing right away if it is stopped in order to avoid a conflict.
- Aircraft must not be at the end of its current ground route.

## 2.11.7 Stop

The stop command causes an Aircraft to stop taxiing immediately and await further instructions. This command should be used only in emergencies.

Command Syntax	
STOP (or ST)	Causes an Aircraft to stop taxiing and await further instructions.

Example Controller Phraseology	Example Command Response
“Hold Position”	AAL747 STOP

## 2.11.8 Determine where an Aircraft is going

There are two commands that can help determine where an Aircraft is trying to go to.

### 2.11.8.1 Spot

If the command is given with nothing following then TGF will return an arriving Aircraft's current spot destination. If an arriving Aircraft has no destination spot then the pilot will receive a message that none was found.

If the command is given with text following it then the text is assumed to be a new route and spot.

Command Syntax	
SPOT or SP	Display a message as which spot (if any) an arrival Aircraft is scheduled to go to.
SPOT or SP taxi instructions	Have an Aircraft follow the given taxi instructions.

Example Controller Phraseology	Example Command Response
No Controller Phraseology	AAL123 SPOT
	AAL123 SP

### Limitations:

- Any taxi instructions issued must be valid.

### 2.11.8.2 Gate

If the command is given with nothing following then TGF will return an arriving Aircraft's current gate destination. If an arriving Aircraft has no destination gate then the pilot will receive a message that none was found.

If the command is given with text following it then the text is assumed to be a new route and gate.

<b>Command Syntax</b>	
GATE	Display a message as to which gate (if any) an arrival Aircraft is scheduled to go to.
GATE taxi instructions	Have an Aircraft follow the given taxi instructions.

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
No Controller Phraseology	AAL123 GATE

#### **Limitations:**

- Any taxi instructions issued must be valid.

### 2.11.9 Determine who an Aircraft is avoiding

This command causes an Aircraft on the ground to send a message as to who (if any one) the Aircraft has stopped in order to avoid hitting.

<b>Command Syntax</b>	
LISTC	Causes an Aircraft on the ground to send a message as to who (if any one) the Aircraft has stopped in order to avoid hitting.

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
No Controller Phraseology	AAL747 LISTC

## 2.11.10 Pushback

This command causes an Aircraft on the ground to drive a ground route in reverse.

<b>Command Syntax</b>	
PB (or PUSHBACK)	Causes a departing Ground Aircraft to follow its Initial Push Back route while driving in reverse.
PB (or PUSHBACK) taxi instructions	Causes a Ground Aircraft to follow the given taxi instructions while driving in reverse.

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
No Controller Phraseology	AAL747 PB  or  AAL747 PUSHBACK
No Controller Phraseology	AAL747 PB A.B  or  AAL747 PUSHBACK A.B

### **Limitations:**

- Any taxi instructions issued must be valid.

## 2.12 Simulating problems and disasters

These commands are used to simulate a problem with an Aircraft. **They should be used with caution.**

### 2.12.1 Simulate ADS-B Equipment problems

The commands in this section are used to simulate the malfunction/failure of an Aircraft's ADS-B equipment.

#### 2.12.1.1 ADS-B Failure Commands

These commands change the ADS-B status of an Aircraft. These commands are used to simulate a total equipment failure. ES 1090 and UAT are two types of ADS-B equipment an Aircraft can have.

Command Syntax	
XP +/-ES1090	Toggles the Aircraft's 1090 extended squitter for ADS-B transmission on and off
XP +/-UAT	Toggles the Aircraft's ADS-B Universal Access Transceiver on and off

Limitations:

- Aircraft must be equipped with given ASD-B type of equipment.

#### 2.12.1.2 ADS-B Malfunction Commands

These commands allow a TGF to simulate a malfunction of an Aircraft's ADS-B equipment.

### 2.12.1.2.1 ADS-B ICAO Command

This command allows a user to change an Aircraft's ADS-B ICAO identifier. This command is used to simulate equipment malfunction. This message changes both the ADS-B Beacon Code and the Transponder Beacon Code.

Command Syntax	
AII hhhhhh	Change an Aircraft's ADS-B ICAO identifier to the given hexadecimal (base 16) code.

Limitations:

- Aircraft must be ADS-B Equipped
- The given id hhhhhh must be a valid positive 24-bit (6 digit hexadecimal base 16) number. A valid hexadecimal number can contain 0 through 9 and A through F. For example, ABC123 is a valid hexadecimal number. A number's is not the same in hexadecimal (base 16) as it is in decimal (base 10). For example 20 in hexadecimal equals 32 in decimal.

### 2.12.1.2.2 Simulate Problem with ADS-B Aircraft ID

The Override ADS-B Alias Command causes the Aircraft's ADS-B equipment to send the wrong Aircraft ID (ACID), while the Cancel ADS-B Alias Override Command causes the Aircraft's ADS-B equipment to end the override and send the correct ACID.

Command Syntax	
OACS acid	Causes the Aircraft's ADS-B equipment to send the given ACID acid.
COACS	Cancels override of the Aircraft's ADS-B equipment.

Limitations:

- Aircraft must be ADS-B Equipped.
- The Aircraft ID given must be valid.

### 2.12.1.2.3 *Simulate Problem with ADS-B Beacon Code*

The Override ADS-B Beacon Code Command causes the Aircraft’s ADS-B equipment to send the wrong Beacon Code, while the Cancel ADS-B Beacon Code Override Command causes the Aircraft’s ADS-B equipment to end the override and send the correct Beacon Code.

<b>Command Syntax</b>	
OAID code	Causes the Aircraft’s ADS-B equipment to send the given Beacon Code code.
COAID	Cancels override of the Aircraft’s ADS-B equipment.

Limitations:

- Aircraft must be ADS-B Equipped.
- The Aircraft ID given must be valid.

### 2.12.2 Simulate Loss of DIS Data

The Suppress DIS Command causes TGF to stop sending track update information about a given Aircraft via DIS, while the Cancel Suppress DIS Command causes TGF to cancel the suppression of track updates for a given Aircraft via DIS.

<b>Command Syntax</b>	
SDIS	Causes TGF to stop sending track update information about an Aircraft via DIS
CSDIS	Cancels suppression of DIS

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
None	AAL123 SDIS
None	AAL123 CSDIS

Limitations:

- The Aircraft ID given must be valid.

### 2.12.3 Landing Gear

This command instructs an Aircraft what to do with its landing gear. **Note: This command will affect the Aircraft’s landing performance and should be used carefully.**

Command Syntax	
LGEAR	Landing gear will be automatically put down when necessary.
LGEAR AUTO	Landing gear will be automatically put down when necessary.
LGEAR DOWN	Landing gear will stay down.
LGEAR UP	Landing gear will stay up. Until either Aircraft is told to put them down or the last possible second.

Example Controller Phraseology	Example Command Response
None	AAL123 LGEAR
None	AAL123 LGEAR AUTO
None	AAL123 LGEAR DOWN
None	AAL123 LGEAR UP

#### Limitations:

- An Aircraft will automatically use the appropriate landing gear setting. (If an Aircraft is landing or doing a touch and go, then the Aircraft’s landing gear will turn on automatically once the Aircraft reaches a third of its landing speed. Most Aircraft’s landing speed is approximately 120 knots so the landing gear would automatically come down at about 40 ft above ground level.)
- If landing gear is put down when Aircraft is on an approach and then canceled with LGEAR AUTO, the Aircraft will leave its landing gear down.

## 2.12.4 Smoke and Fire

These commands cause the Visual Tower Subsystem (VTS) to start a fire or smoke on the given location of the Aircraft. These commands can be given to an Aircraft either in the air or on the ground.

<b>Command Syntax</b>	
SF	Stop fire on a given Aircraft
SF lll	Causes a fire to start at the given location lll on the Aircraft.
SS	Stop smoke on a given Aircraft
SS lll	Causes a smoke plume to start at the given location lll on the Aircraft.

<b>Example Controller Phraseology</b>	<b>Example Command Response</b>
No Controller Phraseology	UAL123 SF
No Controller Phraseology	UAL123 SF ENGINE2
No Controller Phraseology	UAL123 SS
No Controller Phraseology	UAL123 SS FUSELAGE1

The following is a list of all the locations it possible to start a fire or smoke on an Aircraft:

- **Engine1** - Fire or smoke is started on starboard side engine farthest from the fuselage of the Aircraft.
- **Engine2** - Where the fire or smoke is started depends on the number of engines present on an Aircraft. If the Aircraft has two engines then Engine2 is the port side engine. Otherwise, Engine2 is the next starboard side engine.
- **Engine3** - Where the fire or smoke is started depends on the number of engines present on an Aircraft. If the Aircraft has two engines then Engine1 is used. Otherwise, Engine3 is the engine closest to the fuselage on the port side of the Aircraft.
- **Engine4** - Where the fire or smoke is started depends on the number of engines present on an Aircraft. If the Aircraft has two engines then Engine2 is used. Otherwise, Engine4 is the engine farthest from the fuselage on the port side of the Aircraft.
  
- **Fuselage1** - Where the fire or smoke is started varies depending on the Aircraft's type.
- **Fuselage2** - Where the fire or smoke is started varies depending on the Aircraft's type.
- **Fuselage3** - Where the fire or smoke is started varies depending on the Aircraft's type.
- **Fuselage4** - Where the fire or smoke is started varies depending on the Aircraft's type.
- **Fuselage5** - Where the fire or smoke is started varies depending on the Aircraft's type.
- **Fuselage6** - Where the fire or smoke is started varies depending on the Aircraft's type.
  
- **LandingGear1** - Fire or smoke is started on the back starboard side landing gear
- **LandingGear2** - Fire or smoke is started on the front middle landing gear
- **LandingGear3** - Fire or smoke is started on the back port side landing gear

**Limitations:**

- These commands cause a purely visual effect which has **no** affect on the Aircraft's state or flying characteristics.
- Must specify a valid location where the fire or the smoke is to appear.

## 2.12.5 Crash

This command causes an Aircraft to change to a crashed state. The Aircraft will burst into flames on the VTS regardless of whether the Aircraft is on the ground or in the air. However, if an Aircraft is in the air, then the Aircraft will plummet to the ground.

*NOTE:* This command is **not** connected to or affected by the Collision Avoidance setting of the simulator.

**WARNING:** Once an Aircraft is the CRASHED state, the Aircraft will not respond to any commands except TERM and ID. In addition, a CRASHED Aircraft cannot go to any other state except for TERMINATED. This means that careful consideration should be given before issuing this command.

Command Syntax	
CRASH	Crash an Aircraft

Example Controller Phraseology	Example Command Response
No Controller Phraseology	UAL123 CRASH

### Limitations:

- This command cannot be followed by anything.
- TGF estimates which Airport with TGF Ground capabilities is “nearest” to a given Aircraft.

## 3.0 Specifying Restrictions to Obey

A user may specify what restrictions an Aircraft should obey on an inputted route using one of the following commands:

1. CSTAR
2. DIR
3. FILE
4. OFFSET
5. OS
6. RES
7. RESUME
8. RTE
9. SID
10. STAR
11. =

Syntax	Restrictions Obeyed	Notes
*	All	Default setting for all commands <b>except</b> CSTAR
0	None	Default setting for CSTAR command
S	Speed Only	
A	Altitude Only	

Below is a table containing where to find more information on the commands as well sample Pilot responses.

Command	More Information	Example Pilot Response
CSTAR	Section 2.9.8.2	AAL123 CSTAR A
DIR or RTE	Section 2.5.7	AAL123 DIR HAPPY 0
FILE	Section 2.10.8	AAL123 FILE BAASS..HAPPY S
OFFSET or OS	Section 2.5.5	AAL123 OS R30 0
RES or RESUME or =	Section 2.5.8	AAL123 RES *
RF	Section 2.5.8	AAL123 RF A
SID	Section 2.9.7	AAL 123 SID DAY10.ARNES A
STAR	Section 2.9.8.1	AAL123 STAR TNP.PDZ1 S

## 4.0 Entering Commands

The following sections contain tables the most common usage of the Commands issued to an Aircraft in the air and on the ground respectively.

### 4.1 Table of Air Commands

The table below shows the most common usage of the Commands issued to an Aircraft in the air.

Syntax	Description	Example
? (or HELP) command	Display the proper syntax for the command. Command is a Simulation Pilot command such as A.	AAL787 ? A  AAL787 HELP A
@ location cmd	At Location 'location' do command 'cmd'	AAL787 @ BAASS A220
@A aaa cmd	At given altitude aaa (hundreds of feet) execute command cmd	AAL747 @A 200 PROMPT Contact Controller
@S sss cmd	At given IAS speed sss execute command cmd	AAL747 @S 150 H200
@T +time cmd	At current Simulation time + 'time' do command 'cmd'	AAL787 @T +00:01:30 S220
@T time cmd	At Simulation Time 'time' do command 'cmd'	AAL787 @T 00:10:00 A110
A+/-aaa	Change by given amount aaa (in hundreds of feet)	AAL787 A-020
Aaaa	Descend/Climb to altitude 'aaa' (in hundreds of feet)	AAL787 A230
AF+/-aaa	Change by given amount aaa (in feet)	AAL787 AF+5025
AFaaa	Descend/Climb to altitude 'aaa' (in feet)	AAL787 AF9004
AII hhhhhh	Change an Aircraft's ADS-B ICAO identifier to the given hexadecimal (base 16) code	AAL747 1A2B3C

Syntax	Description	Example
ALERT msg	Causes SimPilot Workstation to show message in a flashing window	AAL747 ALERT Notify Controller of Turbulence
APCH	Prepare Aircraft to make an approach	AAL787 APCH
APT apt	Change Aircraft's arrival airport to 'apt'	AAL787 APT GEN
ATS+/-sss	After Takeoff change speed by sss	AAL747 ATS+20
ATSsss	After Takeoff change speed to sss	AAL747 ATS240
B###	Change Aircraft's ground track heading or bearing to given angle ### (0 to 360 degrees)	AAL787 B340
B###@bbb	Change Aircraft's ground track heading or bearing to given angle ### (0 to 360 degrees) using maximum bank angle bbb	AAL787 B340@35
B+/-###	Change ground track heading or bearing by ### (000 to 360 degrees)	AAL787 B+005
CC freq	Hand-off to a frequency	AAL747 CC 127.5
CLA	Cleared for the approach and landing (Uses the approach based on assigned arrival runway)	AAL747 CLA
CLA NL	Cleared for the approach only (Uses the approach based on assigned arrival runway)	AAL747 CLA NL
CLA XL		AAL747 CLA XL
CLA NL rwy	Cleared for the approach only (Uses the approach based on rwy)	AAL747 CLA NL 25L
CLA XL rwy		AAL747 CLA XL 25L
CLA rwy	Cleared for the approach and landing (Uses the approach based on rwy)	AAL747 CLA 25L
CLR nnn	Cleared for the Route approach that is defined by nnn for the Aircraft's assigned arrival runway	AAL747 CLR X

Syntax	Description	Example
CLR nnn RWY rwy	Cleared for the Route approach defined by nnn on runway rwy	AAL747 CLR X RWY 25L
CLR xxx.nnn	Cleared for the Route approach defined by nnn. The Aircraft should intercept the approach at Fix xxx	AAL747 CLR LEFT.X
CLV	Causes an Aircraft to make a landing using its arrival runway's visual approach	AAL747 CLV
CLV rwy	Causes an Aircraft to make a landing using the specified runway rwy's visual approach	AAL747 CLV 27R
cmd1 ; THEN cmd2 cmd1 ; T cmd2 cmd1 ; > cmd2	Perform <cmd1>; then after the cmd has completed perform <cmd2>.	N112Y DIR <fix>; T A160 N112Y A160 THEN S250 N112Y X <fix> S210; > A160
COACS	Cancel override of the Aircraft's ADS-B equipment	AAL747 COACS
COAID	Cancel override of the Aircraft's ADS-B equipment	AAL747 SOAID
CRASH	Causes an Aircraft to crash	AAL747 CRASH
CRS xxx @T t X xxx @T t	Cross waypoint xxx at time. xxx is a valid waypoint/NAVAID name. t is a valid simulation time.	UAL163 CRS SWEET @T 1:11 UAL163 X SWEET @T 12:05
CRS xxx Aaaa X xxx Aaaa	Cross waypoint xxx at aaa. xxx is a valid waypoint/NAVAID name. aaa is a Change Altitude.	AAL747 CRS CHE A230
CRS xxx Aaaa @T t X xxx Aaaa @T t	Cross waypoint xxx at Time t at altitude aaa. aaa is a Change Altitude command. @T t is At Time command.	UAL163 CRS SWEET A150 @T 12:15 UAL163 X SWEET A150 @T 12:15

Syntax	Description	Example
CRS xxx Aaaa Ssss X xxx Aaaa Ssss	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.	AAL747 CRS CHE A100 S250
CRS xxx AOAAAA CRS xxx AAaaa X xxx AOAAAA X xxx AOAAAA	Cross waypoint xxx at or above aaa. xxx is a valid waypoint/NAVAID name. aaa is a Change Altitude.	AAL747 CRS CHE AOA220
CRS xxx AOAAAA @T t CRS xxx AAaaa @T t X xxx AOAAAA @T t X xxx AAaaa @T t	Cross waypoint xxx at or above Time t at altitude aaa. AOAAAA is a Change Altitude command. @T t is At Time command.	UAL163 CRS SWEET AOA150 @T 12:15 UAL163 X SWEET AOA150 @T 12:15
CRS xxx AOAAAA Ssss CRS xxx AAaaa Ssss X xxx AOAAAA Ssss X xxx AAaaa Ssss	Cross waypoint xxx at or above aaa and at sss. Xxx is a valid waypoint/NAVAID name. aaa is a Change Altitude command. sss is a Change Speed command.	AAL747 CRS CHE AOA120 S250
CRS xxx AOBaaa CRS xxx ABaaa X xxx AOBaaa X xxx ABaaa	Cross waypoint xxx at or below aaa. xxx is a valid waypoint/NAVAID name. aaa is a Change Altitude.	AAL747 CRS CHE AOB210
CRS xxx AOBaaa @T t CRS xxx ABaaa @T t X xxx AOBaaa @T t X xxx ABaaa @T t	Cross waypoint xxx at or below Time t at altitude aaa. AOBaaa is a Change Altitude command. @T t is At Time command.	UAL163 CRS SWEET AOB150 @T 12:15 UAL163 X SWEET AOB150 @T 12:15

Syntax	Description	Example
CRS xxx AOBaaa Ssss CRS xxx ABaaa Ssss X xxx AOBaaa Ssss X xxx ABaaa Ssss	Cross waypoint xxx at or below aaa and at sss. Xxx is a valid waypoint/NAVAID name. aaa is a Change Altitude command. sss is a Change Speed command.	AAL747 CRS CHE AOB150 S250
CRS xxx Ssss X xxx Ssss	Cross waypoint xxx at sss. Xxx is a valid waypoint/NAVAID name. sss is a Change Speed command.	AAL747 CRS CHE S250
CSDIS	Cancel suppression of DIS Messages	AAL747 CSDIS
CSTAR aaa.bbb	Change route to STAR route bbb taking Transition route aaa but do not follow restrictions.	UAL163 CSTAR TNP.PDZ1
CSTAR aaa.bbb apt	Change route to STAR route bbb taking Transition route aaa to Airport apt but do not follow restrictions	UAL163 CSTAR TNP.PDZ1 LAX
D###@bbb	Turn right by ### (000 to 360 degrees) using maximum bank angle bbb	AAL747 D210@35
DGS	Descend via the Aircraft's arrival runway's glide slope	AAL747 DGS
DGS	Descend via Arrival Runway's ILS glide slope	AAL747 DGS
DIR ###.fix	Direct/Capture the waypoint/NAVAID fix on the radial ###.	UAL163 DIR 182.DRAKO
DIR fix	Direct to given Waypoint/NAVAID fix	AAL747 DIR HAPPY
DL (or DATALINK) Aaaa	Downlink request for flight level aaa.	UAL163 DL A200
DL (or DATALINK) AL	Downlink message containing the Aircraft's current Desired Altitude.	DAL72 DL AL
DL (or DATALINK) CANCEL	Notify ATC of cancelation of emergency.	DAL72 DL CANCEL
DL (or DATALINK) CLA [rwy]	Downlink request to fly an ILS approach. Can Optionally specify a Runway rwy to use.	UAL122 DL CLA

Syntax	Description	Example
DL (or DATALINK) CLR [rwy]	Downlink request to fly an RNAV approach. Can Optionally specify a Runway rwy to use.	FFT440 DL CLR
DL (or DATALINK) DIR fix	Downlink request to fly direct to Fix fix.	AAL123 DL DIR CTY
DL (or DATALINK) DIV (or DIVERT) ffff	Inform ATC that an Aircraft is heading direct to fix fff.	DAL72 DL DIV GROVE
DL (or DATALINK) DIV (or DIVERT) rrrr	Inform ATC that an Aircraft has changed the route of flight to rrrr.	DAL72 DL DIV SUNOL..KSFO
DL (or DATALINK) EMERaaa	Inform ATC that an Aircraft is descending/climbing to altitude level aaa.	DAL72 DL EMER200
DL (or DATALINK) MAYDAY	Notify ATC of immediate danger.	DAL72 DL MAYDAY
DL (or DATALINK) Mm[.]mm	Downlink request for m.mm.	ASA56 DL M080
DL (or DATALINK) OS (or OFFSET) Lnnn.n	Inform ATC that an Aircraft has deviated to the left of its current route of flight by nnn.n nautical miles.	DAL72 DL OS L015
DL (or DATALINK) OS (or OFFSET) Rnnn.n	Inform ATC that an Aircraft has deviated to the right of its current route of flight by nnn.n nautical miles.	DAL72 DL R020
DL (or DATALINK) PAN	Notify ATC of situation of urgency.	DAL72 DL PAN
DL (or DATALINK) RTE route	Downlink request to fly Route route.	UAL163 DL RTE J56.DLO
DL (or DATALINK) SID sidRouteName.transRouteName	Downlink request to fly SID Route sidRouteName to Transition Route transRouteName	USA350 DL SID DAY10.ARNES
DL (or DATALINK) Ssss	Downlink request for Indicated Airspeed sss in knots.	DAL72 DL S250

Syntax	Description	Example
DL (or DATALINK) STAR transRouteName.starRouteName [apt]	Downlink request to fly Transition Route transRouteName to STAR Route starRouteName. Can Optionally specify an Airport apt to arrive.	DAL700 DL STAR TNP.PDZ1
EMAxXX	Emergency altitude change to xxx, where xx is altitude in hundreds of feet.	AAL747 EMA200
EQ (or EQUIP)	Displays information about an Aircraft's equipage.	AAL747 EQ AAL747 EQUIP
EXP	Expedite altitude change	AAL747 EXP
Exxx	Expedite to xxx, where xxx is altitude in hundreds of feet.	AAL747 E140
Exxx T A###	Change altitude to ###, expedite through xxx, where ### and xxx are altitudes in 100s of feet.	AAL747 E110 T A170
F### H###	Fly Heading ### (000 to 360 degrees)	AAL747 F270 AAL747 H270
F###@bbb H###@bbb	Change Aircraft's heading to given angle ### (0 to 360 degrees) using maximum bank angle bbb	AAL747 F320@35 AAL747 H320@35
F+/-### H+/-###	Change heading by ### (000 to 360 degrees)	AAL747 F+10 AAL747 H+10
FILE rrr FILE rrr Aaaa FILE rrr Bbbb FILE rrr Ssss	File new flight plan  rrr - new rout aaa - altitude in hundreds of feet bbb - beacon code sss - indicated airspeed in knots	AAL747 FILE BAASS..HAPPY  AAL747 FILE BAASS..HAPPY A230  AAL747 FILE BAASS..HAPPY B1432  AAL747 FILE BAASS..HAPPY S250  AAL747 FILE BAASS..HAPPY A230 B1432 S250

Syntax	Description	Example
FOLLOW (or FLW) <acid> FLW <acid> <dist/time>	Follow the given Aircraft maintain the current separation, distance, or time.	AAL711 FOLLOW DAL151  AAL711 FLW DAL351 5  AAL711 FLW DAL151 2:00
G###@bbb	Turn left by ### (000 to 360 degrees) using maximum bank angle bbb	AAL747 G210@35
HL (or HOLD) <fix> HL <fix> <rad> HL <fix> <turn> HL <fix> <length>	Hold at waypoint.  fix – waypoint/NAVAID, rad – radial, turn – turn direction, length – Tleg (time) or Dleg (distance)	AAL747 HL BRI  AAL747 HL BRI 180  AAL747 HL BRI 270 L  AAL747 HL BRI T5  AAL111 HL BRI 180 L D2
HO freq	Hand-off to a frequency	AAL747 HO 127.5
HOVER fix	Hover over a given fix. Note: Only for Helicopters.	CG2123 HOVER HAPPY
HPP HPP <rad> HPP <turn> HPP <length>	Hold at present position rad – radial, turn – turn direction (L/R), length – Tleg (time) or Dleg (distance)	AAL747 HPP  AAL747 HPP 270 L  AAL747 HPP 180 R T5
HVP	Hover at current location. Note: Only for Helicopters.	CG2123 HVP
ID	Identify the Aircraft to the controller	AAL747 ID
JOIN group	Join group of Aircraft with the name 'group'	AAL747 JOIN GROUP1
L###	Turn left to ### (000 to 360 degrees)	AAL747 L090
L###@bbb	Turn left to magnetic heading ### (000 to 360 degrees) using maximum bank angle bbb	AAL747 L210@35
L+/-### G###	Turn left by ### (000 to 360 degrees)	AAL747 L+10  AAL747 G010

Syntax	Description	Example
LGEAR	Landing gear will be automatically put down when necessary	AAL747 LGEAR
LGEAR AUTO	Landing gear will be automatically put down when necessary	AAL747 LGEAR AUTO
LGEAR DOWNIUP	Landing gear will stay down or up	AAL747 LGEAR DOWN
LOC	Intercept the localizer.	AAL747 LOC
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
MA (or GA)	Execute a missed approach	AAL747 MA AAL747 GA
MFL	Causes Aircraft on an approach pattern to land midway down its arrival runway	AAL747 MFL
MFL ppp	Causes Aircraft on approach pattern to land given percentage ppp down the runway	AAL747 MFL 30
MT RW	Maintain runway heading	AAL747 MT RW
MT RW Annn	Maintain runway heading until altitude nnn	AAL747 MT RW A140
MTS	Maintain speed to the outer marker	AAL747 MTS
NA	Climb/Descend to desired NAS altitude	AAL747 NA
NAV EQUIP	Turns on strict enforcement of equipment restrictions causing an Aircraft to reject any route given to it that contains fixes/waypoints that the Aircraft's equipment cannot handle.	AAL787 NAV EQUIP
NAV SIM	Turn off strict enforcement of equipment restrictions causing an Aircraft to fly any route given to it.	AAL787 NAV SIM

Syntax	Description	Example
OACS acid	Causes the Aircraft's ADS-B equipment to send the given Aircraft Identifier	AAL747 OACS N123
OAID beacon	Causes the Aircraft's ADS-B equipment to send the given Beacon Code/	AAL747 OAID 1201
OFFSET (or OS) Lnn.n	Offset current route by nn.n nautical miles to the left of the Aircraft's forward motion.	AAL747 OS L3
OFFSET (or OS) Rnn.n	Offset current route by nn.n nautical miles to the right of the Aircraft's forward motion.	AAL747 OS R99.8
PROMPT message	Displays message in SimPilot Workstation's Pilot Message box.	AAL747 PROMPT HELLO
R###	Turn right to heading ### (000 through 360 degrees)	AAL747 R90
R###@bbb	Turn right to magnetic heading ### (000 to 360 degrees) using maximum bank angle bbb	AAL747 R210@35
R+/-###	Turn right by ### (000 through 360 degrees)	AAL747 R-110
D###		AAL747 D110
RESUME (or RES or =)	Resume filed route	AAL747 RES
RESUME (or RES or =) F	Resume filed route	AAL747 RES F
RF fix	Resume filed route at a given fix	AAL747 RF BAASS
RS	Cancels speed restriction and resumes preferred speed	AAL747 RS
RTE ###.fix	Direct/Capture the waypoint/NAVAID fix on the radial ###.	UAL163 RTE 182.DRAKO

Syntax	Description	Example
RTE entry.route.exit	Intercept, Capture, Direct-to named airway 'route' – using waypoint/NAVAID 'entry' to determine where to intercept route and 'exit' to determine the direction to travel. 'entry' and 'exit' must be a waypoint/NAVAID present on 'route'.	UAL876 RTE IRQ.J4.FLO
RTE fix	Direct to given Waypoint/NAVAID fix	AAL747 RTE HAPPY
RTE route	Intercept, Capture, Direct-to the airway named 'route'. The airway must be part of the Aircraft's current flight plan.	UAL163 RTE J4
RTE route.fix	Intercept, Capture, Direct-to named airway 'route' – using waypoint/NAVAID 'fix' to determine the direction to travel. 'Fix' must be a waypoint/NAVAID present on 'route'.	UAL257 RTE J4.FLO
RTO	Causes an Aircraft (either a proposed departure or on hold at an airport) to take off. immediately	AAL747 RTO
RWY (or ARRRWY) aaa	Change an Aircraft's arrival runway to aaa.	AAL747 RWY 17L AAL747 ARRRWY 17L
S###	Change indicated airspeed to ### knots	AAL747 S250
S+/-### C###	Change indicated airspeed by ### knots	AAL747 S+10 AAL747 C10 AAL747 C-10
SDIS	Start suppression of DIS Messages	AAL747 SDIS
SF	Stop fire on Aircraft	AAL747 SF
SF section	Start fire on the given section of the Aircraft	AAL747 SF ENGINE2

Syntax	Description	Example
SID aaa.bbb	Change route to Sid route aaa taking bbb away from Aircraft's departure airport	AAL747 SID DAY10.ARNES
SID radial.fix.sid[.eee]	Intercept SID sid using the given Radial radial off of the given Fix fix. Can optionally give where exit the SID at using eee.	AAL747 135.PYE.PORTE4
SQ beacon	Change the beacon code for an Aircraft	AAL747 SQ 0123
SQID beacon	Change the beacon code for an Aircraft and identify the Aircraft for the controller.	AAL747 SQID 0123
SS	Stop smoke on Aircraft	AAL747 SS
SS section	Start smoke on the given section of the Aircraft	AAL747 SS ENGINE2
STAR aaa.bbb	Change route to Star route bbb taking Transition Route aaa and comply with restrictions	AAL747 STAR TNP.PDZ1
STAR aaa.bbb apt	Change route to Star route bbb taking Transition Route aaa to Airport apt and comply with restrictions	AAL747 STAR TNP.PDZ1 LAX
START	Start a pending Aircraft	AAL747 START
STOPTURN	Stop turning and maintain current heading	AAL747 STOPTURN
TD OFF	Causes Aircraft to descend and decelerate at normal rate.	AAL747 OFF
TD ON	Causes Aircraft to descend and decelerate as fast as possible.	AAL747 ON
TERM	Terminate the flight	AAL747 TERM
TNGO	Causes an Aircraft to execute a touch-and-go approach on the Aircraft's arrival runway	AAL747 TNGO
TO	Causes an Aircraft (either a proposed departure or on hold at an airport) to take off. There may be a delay between the command execution and the Aircraft starting its Takeoff roll.	AAL747 TO

Syntax	Description	Example
TS###	Change an Aircraft's true airspeed to ### knots. ### is the airspeed in knots.	AAL747 TS250
TS+/-###	Change an Aircraft's true airspeed by ### knots. ### is the airspeed in knots.	AAL747 TS+20
V#####	Change the vertical velocity to ##### feet per minute.	AAL747 V1000
V-#####	Decrease the vertical velocity by ##### feet per minute to the current vertical velocity.	AAL747 V-1000
V+#####	Increase the vertical velocity by ##### feet per minute to the current vertical velocity.	AAL747 V+1000
VFR OFF	Mark a Flight as flying under VFR	AAL747 VFR OFF
VFR ON	Mark a Flight as flying under IFR	AAL747 VFR ON
WINDS	Produces a report of the winds velocity and direction at the Aircraft's current position	AAL747 WINDS
XP +/- UAT	Toggles the Aircraft's ADS-B Universal Access Transceiver on and off	AAL747 -UAT
XP +/-ES1090	Toggles the Aircraft's 1090 Extended Squitter for ADS-B transmission on and off	AAL747 +ES1090
XP +/-MODEC	Toggles the Aircraft's ModeC on and off.	AAL747 XP -MODEC
XP +/-MODES	Toggles the Aircraft's ModeS on and off.	AAL747 XP +MODES
XP ON/OFF	Toggles the Aircraft's transponder on and off.	AAL747 XP ON

## 4.2 Table of Ground Commands

The table below shows the most common usage of the Commands issued to an Aircraft on the ground.

Syntax	Description	Example
? (or HELP) command	Display the proper syntax for the command. Command is a Simulation Pilot command such as A.	AAL787 ? A AAL787 HELP A
Aaaa	Descend/Climb to altitude 'aaa' (in hundreds of feet)	AAL787 A230
AFaaa	Descend/Climb to altitude 'aaa' (in feet)	AAL787 AF9004
AII hhhhhh	Change an Aircraft's ADS-B ICAO identifier to the given hexadecimal (base 16) code	AAL747 1A2B3C
ALERT msg	Causes SimPilot Workstation to show message in a flashing window	AAL747 ALERT Notify Controller of Turbulence
ARRRWY aaa	Change an Aircraft's arrival runway to rwy. <i>WARNING:</i> this command will cause the Aircraft's ground route to change to use the new arrival runway.	AAL747 ARRRWY 17L
ATS+/-sss	After Takeoff change speed by sss	AAL747 ATS+20
ATSsss	After Takeoff change speed to sss	AAL747 ATS240
CC freq	Contact Controller at frequency.	AAL747 CC 127.5
CF	Causes an Aircraft to remove the next hold on its current ground route involving a ground fix.	AAL747 CF
COACS	Cancels override of the Aircraft's ADS-B equipment	AAL747 COACS
COAID	Cancels override of the Aircraft's ADS-B equipment	AAL747 SOAID
CR	Causes an Aircraft to remove the next hold on its current ground route involving a runway.	AAL747 CR
CRASH	Causes an Aircraft to crash	AAL747 CRASH

Syntax	Description	Example
CT	Causes an Aircraft to remove the next hold on its current ground route involving a taxiway.	AAL747 CT
DPTRWY aaa	Change an Aircraft's departure runway to rwy. <i>WARNING:</i> this command will cause the Aircraft's ground route to change to go to the new departure runway.	AAL787 DPTRWY 18R
EQ (or EQUIP)	Displays the Aircraft's navigation equipment.	AAL747 EQ AAL747 EQUIP
F### H###	Fly Heading ### (000 to 360 degrees)	AAL747 F270 AAL747 H270
F###@bbb H###@bbb	Change Aircraft's heading to given angle ### (0 to 360 degrees) using maximum bank angle bbb	AAL747 F320@35 AAL747 H320@35
FILE rrr FILE rrr Aaaa FILE rrr Bbbb FILE rrr Ssss	File new flight plan  rrr - new rout aaa - altitude in hundreds of feet bbb - beacon code sss - indicated airspeed in knots	AAL747 FILE BAASS..HAPPY  AAL747 FILE BAASS..HAPPY A230  AAL747 FILE BAASS..HAPPY B1432  AAL747 FILE BAASS..HAPPY S250  AAL747 FILE BAASS..HAPPY A230 B1432 S250
GATE	Displays a message as to which gate (if any) an arriving Aircraft is scheduled to go to.	AAL747 GATE
HA fix	Causes an Aircraft to stop taxiing at Fix fix and await further instructions.	UAL747 HA G108
HO freq	Hand-off to a frequency.	AAL747 HO 127.5
HS fix	Causes an Aircraft to stop taxiing before Fix fix and await further instructions.	UAL747 HS G108

Syntax	Description	Example
HS runway HS RWY runway	Causes an Aircraft to stop taxiing before Runway runway and await further instructions.	UAL747 HS 21L UAL747 HS RWY 18
HS taxiway	Causes an Aircraft to stop taxiing before Taxiway taxiway and await further instructions.	UAL747 HS A
ID	Identify the Aircraft to the controller.	AAL747 ID
L###	Turn left to ### (000 to 360 degrees)	AAL747 L090
L###@bbb	Turn left to magnetic heading ### (000 to 360 degrees) using maximum bank angle bbb	AAL747 L210@35
LISTC	Lists who (if any one) the Aircraft has stopped to avoid hitting.	AAL747 LISTC
OACS acid	Causes the Aircraft's ADS-B equipment to send the given Aircraft Identifier	AAL747 OACS N123
OAID beacon	Causes the Aircraft's ADS-B equipment to send the given Beacon Code/	AAL747 OAID 1201
PB (or PUSHBACK)	Causes a departing Ground Aircraft to follow its Initial Push Back route while driving in reverse.	AAL747 PB AAL747 PUSHBACK
PB (or PUSHBACK) rrr	Causes a Ground Aircraft to follow the given Ground Route rrr while driving in reverse.	AAL787 PB A.B AAL787 PUSHBACK A.B
PH (or LW)	Causes an Aircraft to follow its ground route to its departure runway once at its departure runway it will taxi onto the runway getting into takeoff position and await further instructions.	USA23 PH USA23 LW
PROMPT message	Displays message in SimPilot Workstation's Pilot Message box.	AAL747 PROMPT HELLO
PS (or REFUEL) Pppp	Causes an Aircraft to be re-fueled by the given ppp percentage of its current fuel	AAL787 PS P45
PS (or REFUEL) www	Causes an Aircraft to be re-fueled with www pounds of fuel	AAL787 PS 1900

Syntax	Description	Example
R###	Turn right to heading ### (000 through 360 degrees)	AAL747 R90
R###@bbb	Turn right to magnetic heading ### (000 to 360 degrees) using maximum bank angle bbb	AAL747 R210@35
RR (or REROUTE) location	The Aircraft will create a ground route that will take it to the given location. If the Aircraft is stopped then it will wait for instructions to begin moving.	AAL747 RR 24L <i>(Note: for more examples please see Section 2.11.2)</i>
RR (or REROUTE) location via groundRoute	The Aircraft will use the given route to get to the given location. If the Aircraft is stopped then it will wait for instructions to begin moving.	AAL123 RR 27L VIA E AAL123 REROUTE 27L VIA E <i>(Note: for more examples please see Section 2.11.2.1)</i>
RS	Cancels speed restriction and resumes preferred speed.	AAL747 RS
RT	Causes an Aircraft that is currently stopped due to the need for further instructions to resume following its current ground route.	AAL747 RT
RTO	Causes an Aircraft (either a proposed departure or on hold at an airport) to take off. immediately	AAL747 RTO
RWY aaa	Change an Aircraft's departure/arrival runway to rwy. <b>WARNING:</b> this command will cause the Aircraft's ground route to change to go to/from the new departure/arrival runway.	AAL747 RWY 17L
S###	Change indicated airspeed to ### knots.	AAL747 S250
S+/-### C###	Change indicated airspeed by ### knots.	AAL747 S+10 AAL747 C10 AAL747 C-10
S040; TO	Expedite Takeoff	AAL747 S040; TO
SF	Stop fire on Aircraft	AAL747 SF
SF section	Start fire on the given section of the Aircraft	AAL747 SF ENGINE2

Syntax	Description	Example
SP (or SPOT)	Displays a message as to which spot (if any) an arriving Aircraft is scheduled to go to.	AAL747 SP AAL747 SPOT
SQ beacon	Change the beacon code for an Aircraft.	AAL747 SQ 0123
SQID beacon	Change the beacon code for an Aircraft and identify the Aircraft for the controller.	AAL747 SQID 0123
SS	Stop smoke on Aircraft	AAL747 SS
SS section	Start smoke on the given section of the Aircraft	AAL747 SS ENGINE2
START	Start a pending Aircraft.	AAL747 START
STOP (or ST)	Causes an Aircraft to stop taxiing immediately and await further instructions. This command should be used only in emergencies.	AAL747 STOP AAL747 ST
TA	Turn around 180 degrees. Note: Only for Vehicles.	ZZFD01 TA
TERM	Terminate the flight	AAL747 TERM
TO	Causes an Aircraft (either a proposed departure or on hold at an airport) to take off. There may be a delay between the command execution and the Aircraft starting its Takeoff roll.	AAL747 TO
TS###	Change an Aircraft's true airspeed to ### knots. ### is the airspeed in knots.	AAL747 TS250
TS+/-###	Change an Aircraft's true airspeed by ### knots. ### is the airspeed in knots.	AAL747 TS+20
TX (or TAXI) location	The Aircraft will create a ground route that will take it to the given location. The Aircraft will immediately start following the new ground route.	AAL747 TX 24R AAL747 TAXI 24R <i>(Note: for more examples please see Section 2.11.2)</i>
TX <fix>!L	Take the left off of the given taxiway.	AAL123 TX S!L.T
TX <fix>!R	Take the right off of the given taxiway.	AAL123 TX A!R.B
TX L:<fix>	Take the left onto the given taxiway.	AAL123 TX V.L:W

Syntax	Description	Example
TX location VIA groundRoute	The Aircraft will use the given route to get to the given location. The Aircraft will immediately start following the new ground route.	AAL123 TX 27L VIA E  AAL123 TAXI 27L VIA E <i>(Note: for more examples please see Section 2.11.2.1)</i>
TX R:<fix>	Take the right onto the given taxiway.	AAL123 TX E.R:F
XP +/- UAT	Toggles the Aircraft's ADS-B Universal Access Transceiver on and off	AAL747 -UAT
XP +/-ES1090	Toggles the Aircraft's 1090 Extended Squitter for ADS-B transmission on and off	AAL747 +ES1090
XP +/-MODEC	Toggles the Aircraft's ModeC on and off.	AAL747 XP -MODEC
XP +/-MODES	Toggles the Aircraft's ModeS on and off.	AAL747 XP +MODES
XP ON/OFF	Toggles the Aircraft's transponder on and off.	AAL747 XP ON

## 5.0 Clarification

This Section contains clarification for when to use certain syntax in a command.

### 5.1 Entering simultaneous commands using a semicolon

TGF allows entering multiple command lines at once by using the “;” character to separate commands on the same command line. These commands will all start immediately: to delay a command until after another command completes, use the THEN command.

**NOTE: If one command fails, then all commands that follow it on the same command line will not execute.**

**WARNING: If a command sometimes takes additional information after it, it will always fail if the semicolon is omitted before another command; whatever follows it might be taken as information to the previous command.**

- For example, CLA allows an optional new runway to be specified, so if it is not followed by a semicolon it will fail. Correct way: “CLA ; S230”
- Another example, HPP allows several options and so if it is not followed by a semicolon it will fail. Correct way: “HPP ; A100”

**The commands that take options are subject to change. When in doubt on whether a command may be followed by another command safely, use the semicolon.**

There are certain commands that may be followed by another command without using a “;” after them (notably, commands with a numeric value as part of the command word). These commands never need a parameter and always consist of a single command word.

For example, TGF can be commanded to change an Aircraft’s heading and altitude at the same time, using “**H280 A120**” (it is equivalent to “**H280; A120**”).

- TGF Commands that may be followed by another command without requiring them to be separated by a “;”:
  - Altitude commands (A###)
  - Altitude rate commands (V###)
  - Heading commands (H###)
  - Speed, Resume speed, and Maintain speed (S###, M###, MTS, RS)
  - Expedite Altitude commands (E###)
  - Expedite Existing Altitude commands (EXP)

As another example, “**A110 THEN S250 ; H150**” is the same as “**A110 ; THEN S250 ; H150**”. It means that the Aircraft will go to 11,000 feet and simultaneously turn to heading 150. Once at 11,000 feet altitude the Aircraft will go to an indicated airspeed of

250. (THEN commands always wait for the completion of the last command received by the commanded Aircraft prior to the THEN command, if successful.

If in doubt on whether a command may be followed by another command safely, use the semicolon. Extra spaces before and after the “;” character in the command line are ignored by TGF.

## 5.2 When to use @ with taxi instructions

Use the @ symbol to instruct an Aircraft on the ground that it should use the specified intersection to take off from a runway. For example “TX 17R VIA K.EH@” will instruct an Aircraft that it should expect to take off from runway 17R where it intersects with taxiway EH. If the @ symbol is not used then an Aircraft will assume that is supposed to take off from the top of a runway in the picture below the Aircraft would attempt to take off from the intersection of runway 17R and taxiway EF.

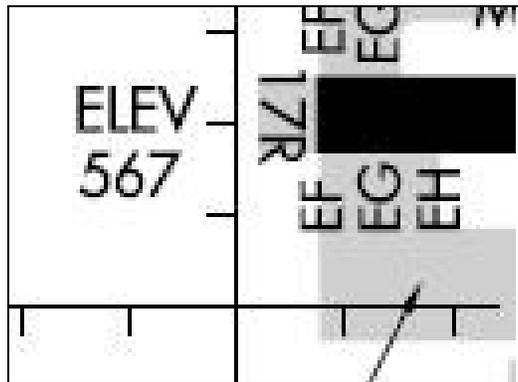


Figure 6 Runway and Taxiway intersections

## 5.3 When to use : with a Fix name

If data from multiple Centers are included in the imported Airspace then there is a chance of having several Fixes with the same name. In order to differentiate between Fixes with the same name, ICAO identifiers should be associated with each Fix. The ICAO identifier should be used with both the Fix and any FRDs involving the Fix. The TGF syntax to use a Fix and its ICAO identifier is <fix>:<identifier>. **Note: There is NO space before or after the “:”.** If the ICAO identifier is not provided then TGF will make the best guess as to what Fix to use.

For example two Centers A and B are included in the imported Airspace. Each Center has a Fix called HAPPY located in it. Center A’s HAPPY has an ICAO identifier of K1 while Center B’s HAPPY has an ICAO identifier of K2. Center B’s HAPPY would be referred to as HAPPY:K2. An FRD that used Center B’s HAPPY would be

HAPPY246010:K2. If “RTE HAPPY246010:K2..HAPPY:K2.J148.MCW” was issued to an Aircraft, then the Aircraft would fly from its current position to FRD HAPPY246010 in Center B. Once at the FRD the Aircraft would then fly to HAPPY in Center B. From that Fix the Aircraft would join Airway J148 and follow it to MCW.

## 5.4 When to use “.”

Use the “.” symbol to separate fixes, airways, gates, spots, runways, or taxiways when issuing a route or taxi command. For example “TX 17C VIA K.EG@” instructs an Aircraft on the ground to taxi to runway 17C using K until it gets to taxiway EG. The Aircraft should turn on to EG in the direction of the runway and hold short of 17C. For example “RTE HAPPY.J21.PAPPY” instructs an Aircraft in the air to get on Airway J1 at the HAPPY fix and to follow J21 to PAPPY.

## 5.5 Examples

The following sections contain examples of various command lines.

### 5.5.1 Multiple Commands

This section contains examples of multiple commands issued as a single Command line

- **DIR BAASS ; THEN A220**
  - The Aircraft will go directly to BAASS and then go to flight level 220.
- **DIR HAPPY ; HL HAPPY**
  - Aircraft will go directly to HAPPY and then hold at HAPPY. **Note:** Only have to do this if HAPPY is not currently on the Aircraft’s route. Otherwise, the Hold command by itself will work.
- **HL PAPPY L210 T5 ; A190**
  - Aircraft will hold at happy using the given holding pattern and go to flight level 190.
- **A110 THEN S250 ; H150**
  - The Aircraft will turn to heading 150 and go to 11,000 ft. Once at 11,000 ft the Aircraft will go to an indicated airspeed of 250.
- **X POPPY A230 ; S280**
  - The Aircraft will go slow/speed up to an indicated airspeed of 280. In addition, the Aircraft will cross POPPY at flight level 230. (However, the crossing restriction **MUST** be last when combining a speed command with a speed-restricted crossing, or an altitude command with an altitude-restricted crossing.)
- **@ BAASS A330 ; S290**

- The Aircraft will go slow/speed up to an indicated airspeed of 290. Once the Aircraft reaches BAASS it will go to flight level 330.
- **A110 S260**
  - The Aircraft will go to 11,000 ft and go to an indicated airspeed of 260.

## 5.5.2 Route, Taxi, and Reroute Commands

The following sections contain examples of both valid and invalid route, taxi, and reroute commands.

### 5.5.2.1 Valid Commands

- **DIR BAASS HAPPY**
  - The Aircraft will go to BAASS then HAPPY.
- **RTE POPPY.UPT**
  - The Aircraft will go to POPPY then UPT.
- **DIR MKE**
  - The Aircraft will go directly to MKE.
- **DIR FXE.SINCA ; A220**
  - The Aircraft will go to flight level 220. In addition, the Aircraft will go to FXE then SINCA.
- **TX A.B.C ; HS B**
  - The Aircraft will create a ground route using taxiways A, B, and C. The Aircraft will take taxiway A to taxiway B. Before reaching taxiway B the Aircraft will stop and await further instructions.
- **TX 27L VIA D.E.F ; HA V112**
  - The Aircraft will create a ground route to Runway 27L using taxiways D, E, and F. The Aircraft will take taxiway A to taxiway B to taxiway F. The Aircraft will stop at ground fix V112.

### 5.5.2.2 Invalid Commands!!!

- **DIR BAASS ; THEN HAPPY**
  - This command line will be partially rejected because HAPPY is a fix and not a valid Command and the THEN command can only be followed by Commands. The result of this command line is that the Aircraft will only go to BAASS.
- **RTE POPPY ; T UPT**
  - This command line will be partially rejected because UPT is a fix and not a valid Command and the THEN command can only be followed by Commands. The result of this command line is that the Aircraft will only go to POPPY.
- **TX E ; B**

- This command line will be partially rejected because B is a taxiway and not a valid Command. The result of this command line is that the Aircraft will taxi to taxiway E and stop.
- **TX 27R; VIA H.J.K**

This command line will be partially rejected because VIA is not a command: it is an option of the TAXI command. The result of this command line is that the Aircraft will create a ground route to Runway 27R.