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Pilot Briefing: Climb Via, Descend Via, Speed Adjustments

NBAA Access Committee – Airspace, ATC, & Flight Technologies Working Group

Rev: 1.01 20 Feb 2014

Procedures Effective April 3, 2014

Acknowledgments

NBAA gratefully acknowledges the assistance of the following groups in the preparation of this program:

- Jeppesen, Inc.
 - Jeppesen navigation data and charts furnished for this program are for training & familiarization purposes only. They are not to be used for navigation purposes
- Performance-Based Aviation Rulemaking Committee (PARC)
Pilot and Controller Phraseology System Integration (PCPSI)
Working Group
- FAA's PBN Policy and Support Group
- FAA Flight Standards - Performance Based Flight Systems
Branch (AFS-470)

New & Revised Air Traffic Procedures

Climb Via, Descend Via, & Speed Adjustments

- Effective April 3, 2014
- Introduces the “Climb Via” clearance
- Updates the “Descend Via” clearance
- Revises & expands on ATC clearance phraseology supporting speed adjustments
- Provides ATC with new clearance/phraseology options
- Reduces frequency congestion
- Reduction in hear-back/read-back errors

Overview:

- Simple, intuitive phraseology for issuing a clearance to laterally & vertically navigate a departure or an arrival
- Pilots must be familiar with the application of these types of clearances:
 - “**Climb Via/Descend Via**”
 - Climb/Descend Via “**Except Maintain**”
 - Climb/Descend “**and Maintain**”
 - “**Climb and Maintain**” OR “**Descend and Maintain**”
 - Speed Phraseology
- Purpose of this program is to provide this familiarization
 - Definitions
 - Examples of operational application
 - Quick Reference Card

Pilots Need To Know

“Climb Via” & “Descend Via”

- **“Climb Via”:**
 - An abbreviated ATC clearance that requires compliance with a procedure’s lateral path, associated speed restrictions and altitude restrictions along the cleared route or procedure until climbing to the “Top Altitude” published on the SID
- **“Descend Via”:**
 - An abbreviated ATC clearance that requires compliance with a published procedure’s lateral path and associated speed restrictions and provides a pilot-discretion descent to comply with published altitude restrictions until descending to the “Bottom Altitude” published on the STAR

Pilots Need To Know

“Climb Via/Descend Via Except Maintain”

- Execute the Climb Via clearance to an ATC assigned “Top Altitude”
- Execute a Descend Via clearance to an ATC assigned “Bottom Altitude”

Pilots Need To Know

“Climb and Maintain” or “Descend and Maintain”

- Pilot is expected to vacate current altitude and commence an **unrestricted climb/descent** to comply with the clearance
- For aircraft already climbing via a SID, or descending via a STAR, published altitude restrictions **are deleted** unless re-issued by ATC
- Speed restrictions always **remain in effect** unless the controller explicitly cancels or amends the speed restrictions

Pilots Need To Know

“Comply With Restrictions”

- Requires aircraft joining or resuming a procedure to comply with published restrictions
- May be used in lieu of reissuing individual restrictions

Pilots Need To Know

Speed Phraseology

- ***“Climb Via” or “Descend Via” :***
 - Absent any qualifying instructions, issuance of a climb or descend via clearance **cancel**s a previously issued ATC speed adjustment and provides pilot discretion to adjust speed while requiring compliance with upcoming restrictions
 - ATC **may require** compliance with a previous ATC-issued speed adjustment using phraseology:
 - *“Proceed direct FNCHR, maintain three zero zero knots until FNCHR , **then** descend via the FNCHR one arrival, landing north”*
 - Where there are no upcoming speed restrictions, issuance of a *“Proceed direct (WP name), climb/descend via”* cancels a previously issued speed adjustment and authorizes speed at pilot's discretion as appropriate for the phase of flight, ensuring compliance with 14 CFR 91.117
- ***“Resume Normal Speed”:***
 - Cancels ATC issued speed restrictions and instructs pilot to return to normal aircraft speed where no restrictions are published on the procedure/route currently being flown
 - It does not delete speed restrictions on upcoming segments of flight (e.g. a STAR later in the flight)
 - This does not relieve the pilot of those speed restrictions which are applicable to 14 CFR Section 91.117
- ***“Resume Published Speed” :***
 - Cancels ATC issued speed restrictions; pilot is expected to comply with speeds published on the SID/STAR
- ***“Delete Speed Restrictions” :***
 - Cancels ATC assigned, and
 - Cancels all published speed restrictions on a charted procedure

Pilot/Controller Phraseology

- Pilots shall respond to “Climb Via” or “Descend Via” clearances by repeating the clearance verbatim; phrases such as “on the” or “descending on” a procedure are not acceptable and can create additional workload with unnecessary controller queries
- When changing frequencies or on initial contact advise ATC of current altitude, “Climbing/Descending Via” procedure name, and runway transitions if assigned; if issued an altitude or speed not contained on the SID/STAR, advise ATC of restrictions issued by the prior controller



Pilot/Controller Phraseology

Examples:

“Cactus Seven Eleven leaving two thousand climbing via the Laura Two departure.”

“Delta Fifty Eight climb via SID except cross MKALA at or above seven thousand.”

“American Seventy Seven proceed direct ROCKR, cross ROCKR at or above one zero thousand, climb via the BIZEE Two departure.”

“United Thirty Five cleared to Johnston Airport, Scott One departure, JONEZ transition, Q-one forty five, climb via SID except maintain flight level one eight zero.”

“JetBlue Six Zero Two leaving flight level two one zero descending via the IVANE two arrival landing south.”

“Delta One Twenty One leaving flight level one niner zero, descending via the EAGUL Five arrival runway two-six transition.”

Briefing Topics



Climb Via



Descend Via



Speed
Adjustments



Additional
Resources

Please click on the above picture to access the program pertaining to “Climb Via”, “Descend Via” and ATC speed adjustments. Within each briefing, you will have the option to return to this menu.

Exit Program

Briefing Topics – Climb Via (CV)



Terminology



Operational Application



Predeparture Clearance (PDC)

[illegible]

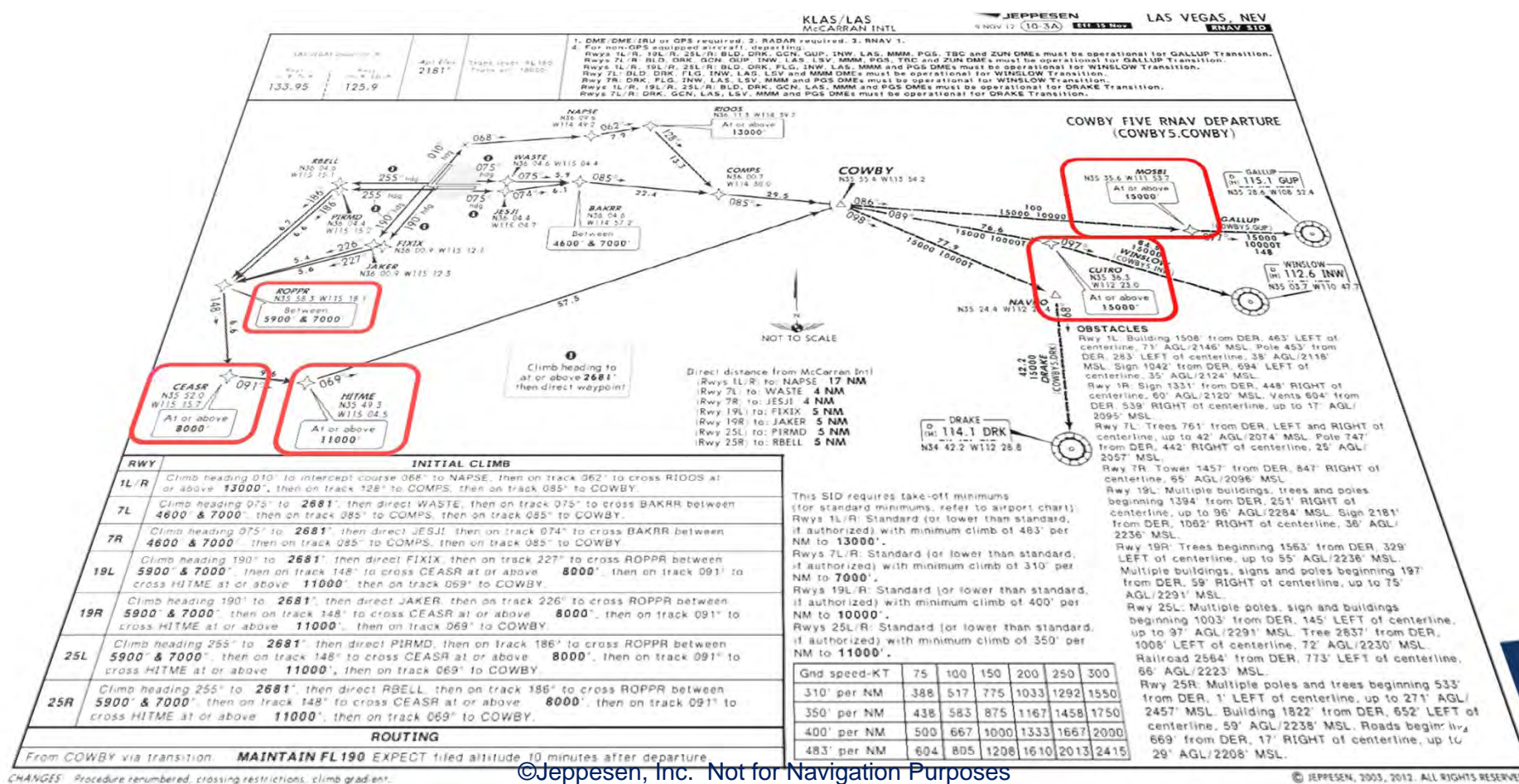
Briefing Card



FAA “Climb Via” Video

[Return To Briefing Topic Main Menu](#)

An abbreviated ATC clearance that requires compliance with the procedure lateral path, associated speed restrictions, and altitude restrictions along the cleared route or procedure.



Climb Via (AIM 5-2-8 e 4)

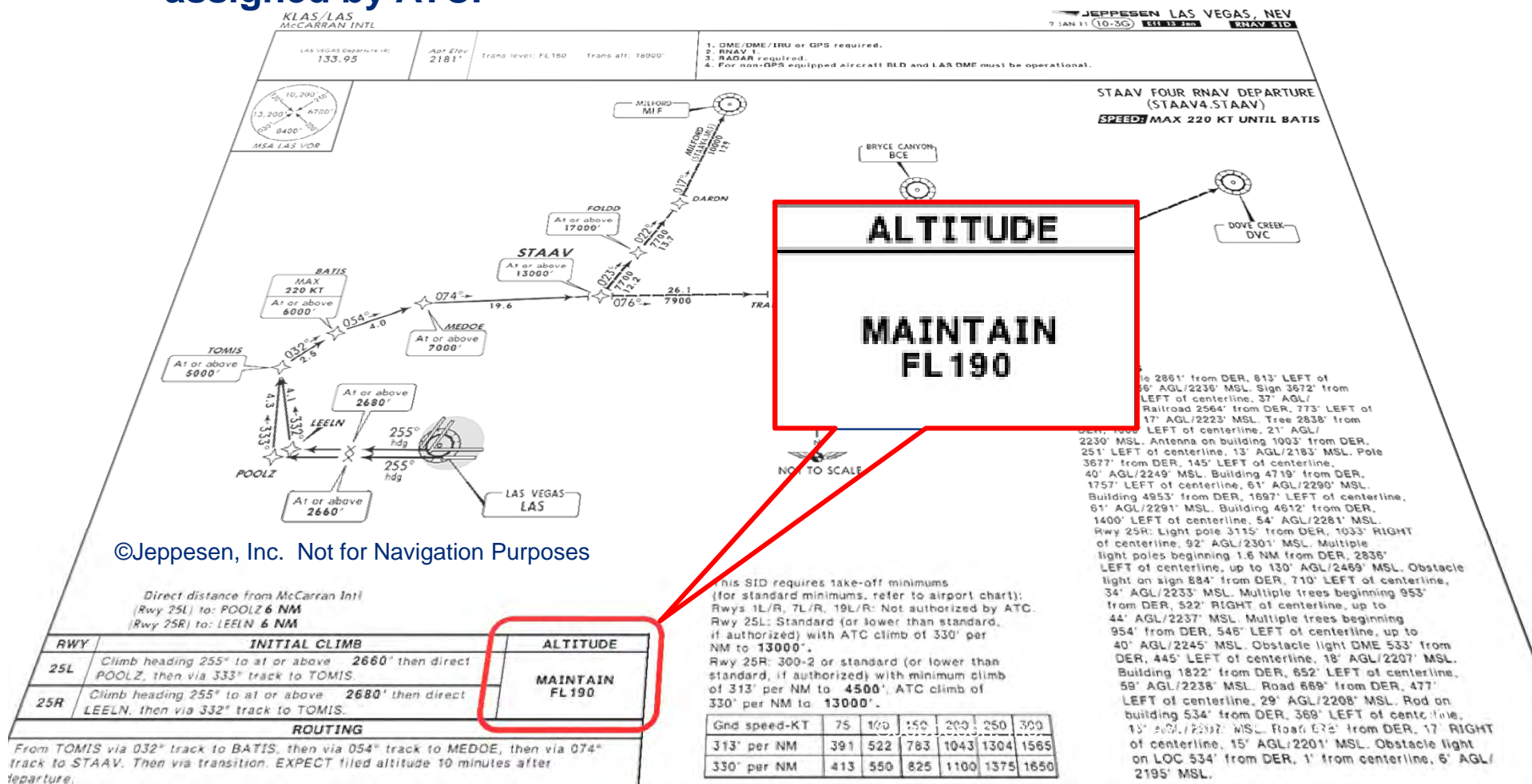
Authorizes Pilot To:

- When used in the IFR departure clearance, in a PDC, DCL* or when subsequently cleared after departure to a waypoint depicted on a SID, to join a procedure after departure or resume a procedure
- When vertical navigation is interrupted and an altitude is assigned to maintain which is not contained on the published procedure, to climb from that previously assigned altitude at pilot's discretion to the altitude depicted for the next waypoint
 - ATC must ensure obstacle clearance until the aircraft is established on the lateral and vertical path of the SID
- Once established on the depicted departure, to climb and to meet all published or assigned altitude and speed restrictions

*DCL = Departure Clearance Via Data Link FANS 1/A Aircraft/Operators

Top Altitude:

In reference to SID published altitude restrictions the charted “maintain” altitude contained in the procedure description or assigned by ATC.



Top Altitude

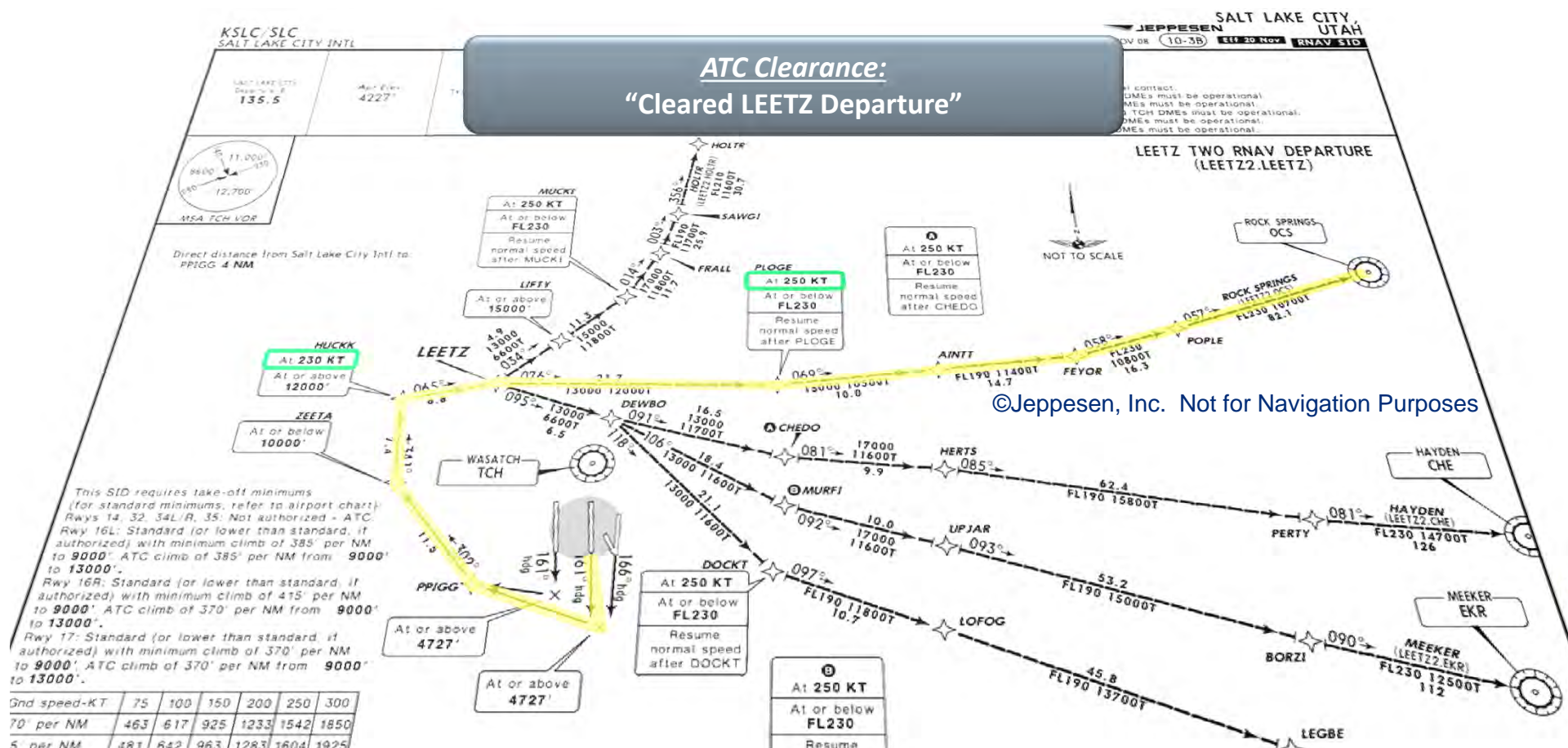
- May be published for all runways & transitions
- May be specific to a particular runway/transition
- It is not.
 - The altitude filed in the IFR flight plan
 - The “expect” altitude in the IFR clearance or published on the SID

INITIAL CLIMB		ALTITUDE
RWY		
34L	Climb heading 341° to 4727', then direct WETIK, then via depicted route to NSIGN.	MAINTAIN FL230 or lower filed altitude.
34R	Climb heading 341° to 4727', then LEFT turn direct RATTO, then via depicted route to NSIGN.	
35	Climb heading 346° to 4727', then LEFT turn direct MELEC, then via depicted route to NSIGN.	
ROUTING		
Via transition. EXPECT filed altitude 10 minutes after departure.		

INITIAL CLIMB		ALTITUDE
RWY		
17C	Climb heading 174° to intercept course 155° to NAVYE, then on track 105° to JGIRL, cross JGIRL at or above 5000', then on depicted route to AKUNA. NOTE: Do not exceed 240 KT until JGIRL.	MAINTAIN 10000
17R	Climb heading 174° to intercept course 153° to NAVYE, then on track 105° to JGIRL, cross JGIRL at or above 5000', then on depicted route to AKUNA. NOTE: Do not exceed 240 KT until JGIRL.	
18L	Climb heading 174° to intercept course 191° to BPARK, then on track 253° to YAMEL, cross YAMEL at or above 5000', then on depicted route to AKUNA. NOTE: Do not exceed 240 KT until YAMEL.	
18R	Climb heading 174° to intercept course 190° to BPARK, then on track 253° to YAMEL, cross YAMEL at or above 5000', then on depicted route to AKUNA. NOTE: Do not exceed 240 KT until YAMEL.	
31L/R	Climb on assigned heading for RADAR vectors to AKUNA. MAINTAIN 5000'.	
35L	Climb heading 354° to 1120', then direct CUZEN, cross CUZEN at or above 5000', then on depicted route to AKUNA. NOTE: Do not exceed 240 KT until CUZEN.	
35C	Climb heading 354° to 1120', then direct CUZEN, cross CUZEN at or above 5000', then on depicted route to AKUNA. NOTE: Do not exceed 240 KT until CUZEN.	
36L/R	Climb heading 354° to 1120', then direct HAZKL, cross HAZKL at or above 5000', then on depicted route to AKUNA. NOTE: Do not exceed 240 KT until HAZKL.	
ROUTING		
Via transition. EXPECT filed altitude 10 minutes after departure.		

An ATC Clearance That Includes An IFR Departure Procedure

- Is a clearance to fly the depicted route & assigned transition
- Is a clearance requiring compliance with published speed restrictions
- **However, altitude assignment & vertical navigation is a separate clearance**

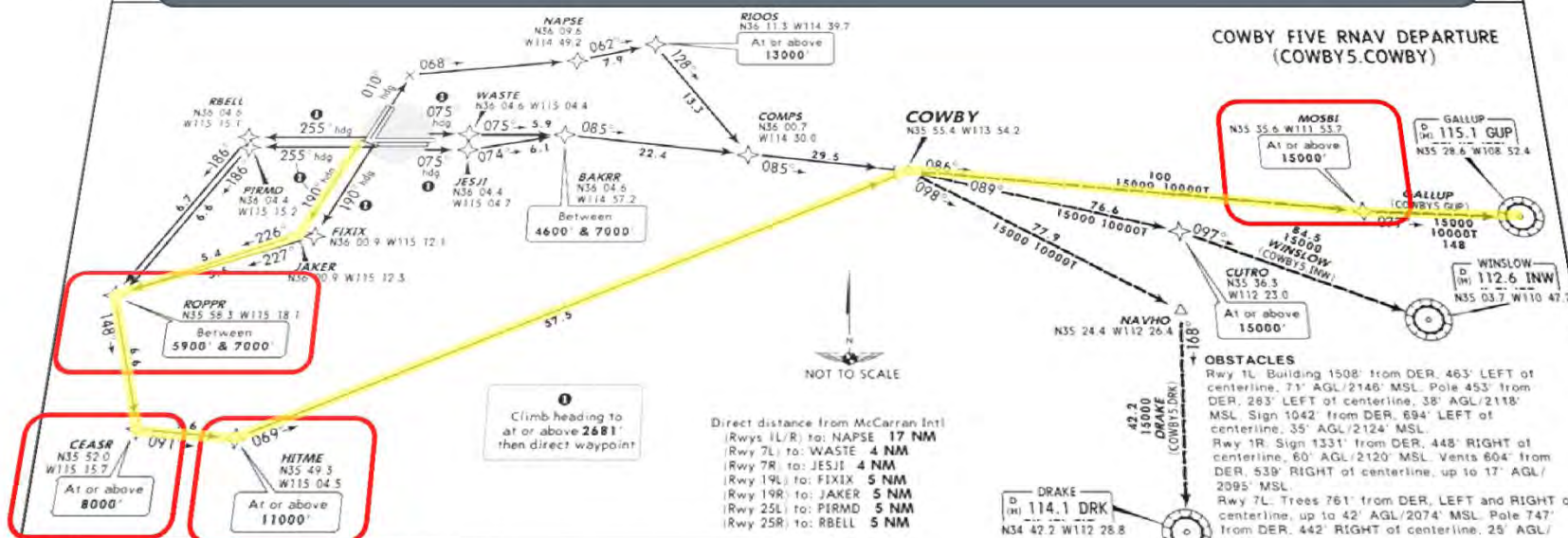


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KLAS/LAS
McCARRAN INTLJEPPESSEN
9 NOV 12 (10-3A) 11 NovLAS VEGAS, NEV
RNAV SID

ATC Voice:

"Cleared...Cowboy Five Departure, Gallup Transition, Then As Filed. Climb Via SID..."

COWBOY FIVE RNAV DEPARTURE
(COWBY5.COWBY)

Direct distance from McCarran Intl

(Rwys L/R) to: NAPSE 17 NM

(Rwy 7L) to: WASTE 4 NM

(Rwy 7R) to: JESJ 4 NM

(Rwy 19L) to: FIXIX 5 NM

(Rwy 19R) to: JAKER 5 NM

(Rwy 25L) to: PIRMD 5 NM

(Rwy 25R) to: RBELL 5 NM

ROUTING

From COWBY via transition. **MAINTAIN FL190. EXPECT** filed altitude 10 minutes after departure.

Gnd speed-KT	75	100	150	200	250	300
310' per NM	388	517	775	1033	1292	1550
350' per NM	438	583	875	1167	1458	1750
400' per NM	500	667	1000	1333	1667	2000
483' per NM	604	805	1208	1610	2013	2415

Railroad 2564' from DER, 773' LEFT of centerline, 86' AGL/2223' MSL.

Rwy 25R Multiple poles and trees beginning 533' from DER, 1' LEFT of centerline, up to 271' AGL/2457' MSL. Building 1822' from DER, 652' LEFT of centerline, 59' AGL/2238' MSL. Roads beginning 669' from DER, 17' RIGHT of centerline, up to 29' AGL/2208' MSL.

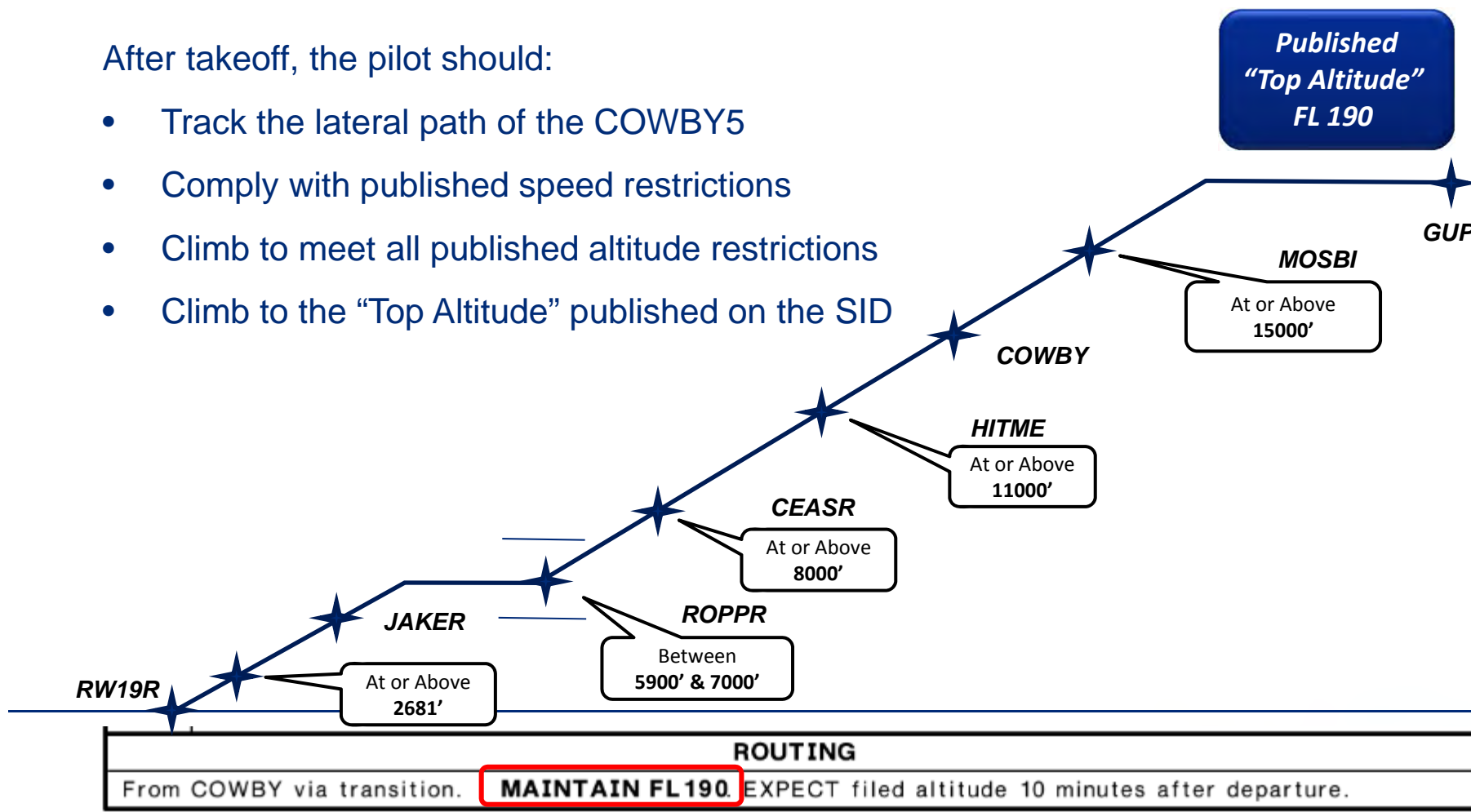
CHANGES: Procedure renumbered, crossing restrictions, climb gradient.

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“Climb Via SID” Clearance

After takeoff, the pilot should:

- Track the lateral path of the COWBY5
- Comply with published speed restrictions
- Climb to meet all published altitude restrictions
- Climb to the “Top Altitude” published on the SID



Pilot/Controller Initial Contact Phraseology

**“Las Vegas Departure,
Gulfstream Six Five Zero Golf Alpha,
Leaving Two Thousand Eight Hundred,
Climbing Via The Cowboy Five Departure”**



**“Gulfstream Six Five Zero Golf Alpha,
Las Vegas Departure, Radar Contact”**



Climb Via – Operational Application

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KDEN/DEN
DENVER INTL

JEPPESSEN DENVER, COLO
16 AUG 13 (10-3L) Eff 22 Aug RNAV SID

Denver Departure R: 128.25
App Elev: Sea
Graphic: 1. DME/DME/IRU or GPS required. 2. RNAV 1. 3. Turbojets only. 4. Tskedft Rwy 8: 16L R, 17L R, 34L R, 35L R. RADAR required for non-GPS equipped aircraft. 5. Rwy 25: RADAR required. 6. Accelerate to at or above 250 KT above 10000'. If slower speed is required to meet crossing restrictions, advise clearance delivery prior to taxi.

EPKEE TWO RNAV DEPARTURE
(EPKEE2.WEEDS)

RWY INITIAL CLIMB

ATC Voice:

"Cleared...EPKEE Two Departure, DUUCE Transition, Then As Filed. Climb Via SID..."

Published
"Top Altitude"

MAINTAIN FL230

MAINTAIN FL230

Published "Top Altitude" (FL 230) Is Below
The Last Published Altitude Restriction

Do Not Climb Above The Published "Top Altitude"
Without Further ATC Clearance

5934', then minimum climb of 250' per NM to 14000'.
Rwy 25: Standard (or lower than standard, if authorized) with minimum climb of 400' per NM to 5934'.
Rwy 34L: Standard (or lower than standard, if authorized) with minimum climb of 400' per NM to 5934', then minimum climb of 215' per NM to 14000'.
Rwy 34R: Standard (or lower than standard, if authorized) with minimum climb of 400' per NM to 5934', then minimum climb of 220' per NM to 14000'.
Rwy 35L: Standard (or lower than standard, if authorized) with minimum climb of 400' per NM to 5934', then minimum climb of 230' per NM to 14000'.
Rwy 35R: Standard (or lower than standard, if authorized) with minimum climb of 400' per NM to 5934', then minimum climb of 235' per NM to 14000'.

215' per NM	269	358	538	717	896	1075
220' per NM	275	367	550	733	917	1100
230' per NM	288	383	575	767	958	1150
235' per NM	294	392	588	783	979	1175
245' per NM	306	408	613	817	1021	1225
250' per NM	313	417	625	833	1042	1250
255' per NM	319	425	638	850	1063	1275
280' per NM	350	467	700	933	1167	1400
400' per NM	500	667	1000	1333	1667	2000
450' per NM	563	750	1125	1500	1875	2250
465' per NM	581	775	1163	1550	1938	2325
500' per NM	625	833	1250	1667	2083	2500

CHANGES: Procedure renumbered, VCTRE crossing restriction, procedure note.

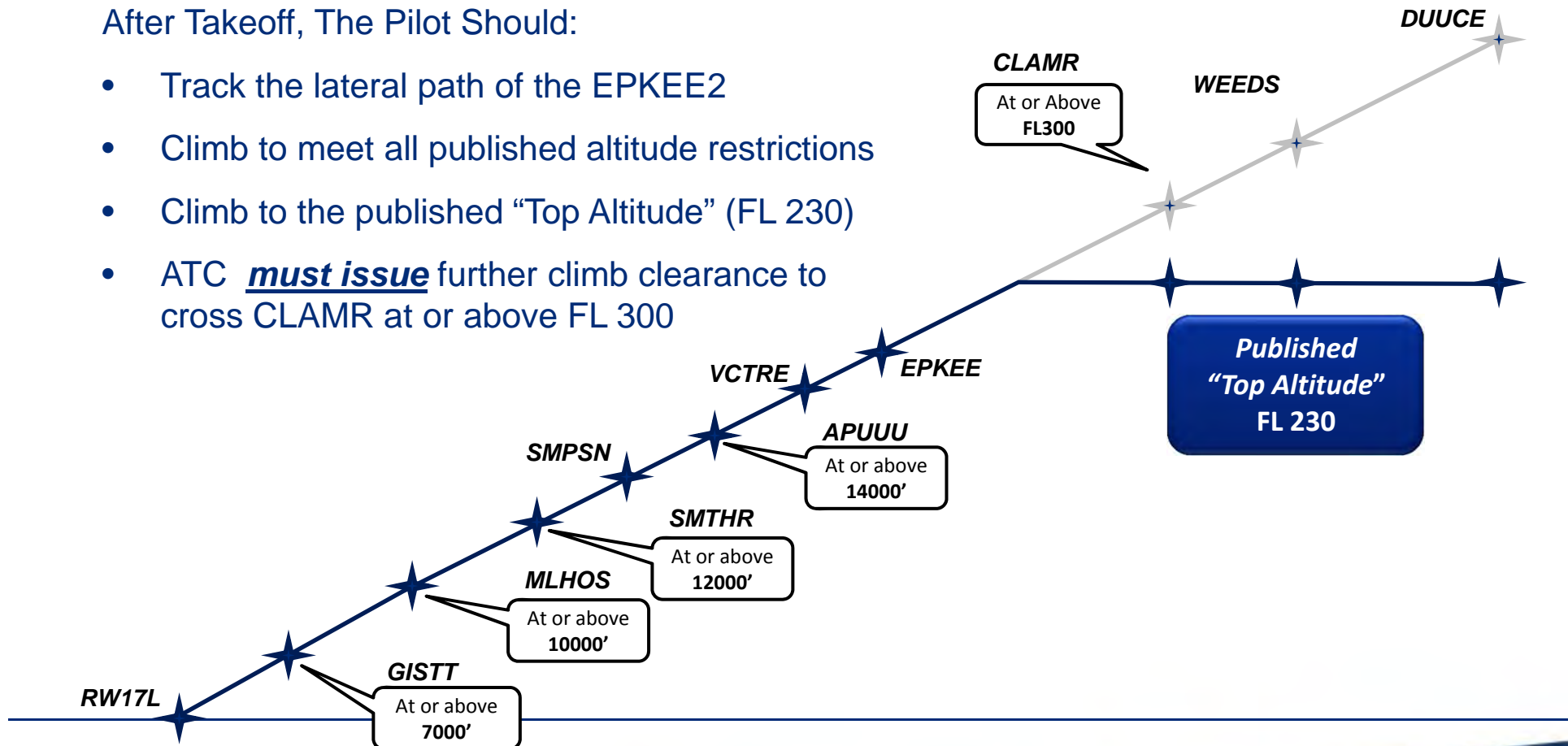
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<ESC Exit>

“Climb Via SID”

After Takeoff, The Pilot Should:

- Track the lateral path of the EPKEE2
- Climb to meet all published altitude restrictions
- Climb to the published “Top Altitude” (FL 230)
- ATC **must issue** further climb clearance to cross CLAMR at or above FL 300



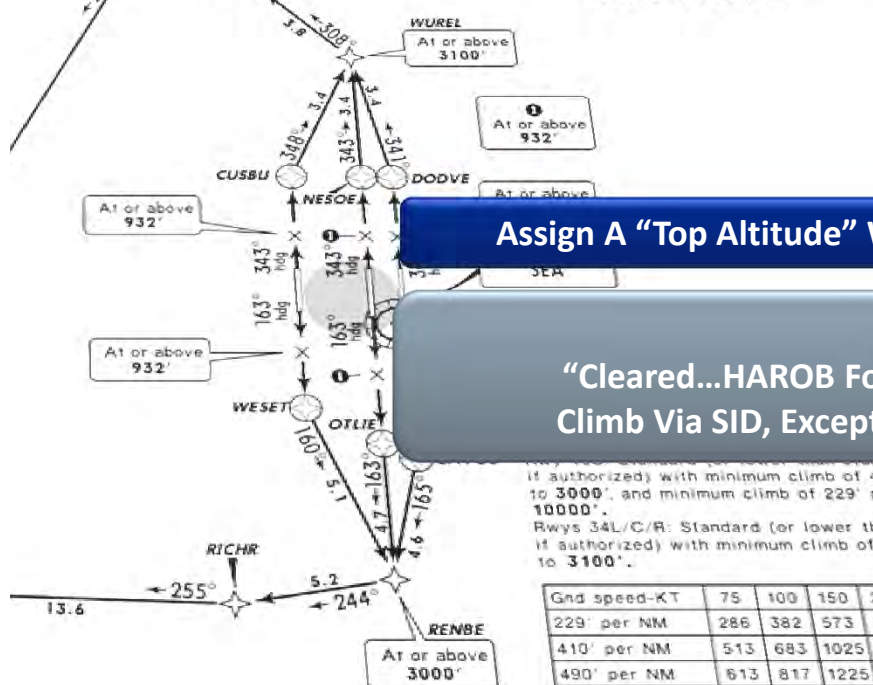
Climb Via, Except Maintain...

Used To Assign Or Amend The Top Altitude

- Used to assign a “Top Altitude” when not published on the chart
 - Some SIDs do not publish a “Top Altitude”
 - “Top Altitudes” will be charted in the future on all SIDs
 - In the interim, “*Climb Via, Except Maintain*” phraseology will be used to assign the “Top Altitude” that is not published on the chart
- When a “Top Altitude” is published on a chart
 - Used to instruct the pilot to comply with all published altitude and speed restrictions, but to climb and maintain a “Top Altitude” **that differs** from that published on the chart

E/IRU or GPS required. 2. RNAV 1. required.
GPS equipped aircraft departing Rwy 16L/C/R: OLM DME must be operational, for HOQUAM transition.
GPS equipped aircraft departing Rwy 34L/C: PAE DME must be operational, additionally OLM DME must be operational for HOQUAM transition.
GPS equipped aircraft departing Rwy 34R: PAE and SEA DMEs must be operational, additionally OLM must be operational for HOQUAM transition.

HAROB FOUR RNAV DEPARTURE (HAROB4.HAROB)



Assign A "Top Altitude" When One Is Not Published On A SID

ATC Voice:

"Cleared...HAROB Four Departure, ERAVE Transition,
Climb Via SID, Except Maintain One Five Thousand..."

**MAINTAIN
assigned altitude**

**MAINTAIN
assigned altitude**

INITIAL CLIMB

ig 163° to at or above 932', then direct CAVOB, then on track 165° to cross RENBE 3000', then on depicted route to HAROB, cross HAROB at or above 10000'.

ig 163° to at or above 932', then direct OTLIE, then on track 163° to cross RENBE 3000', then on depicted route to HAROB, cross HAROB at or above 10000'.

ig 163° to at or above 932', then direct WESET, then on track 160° to cross RENBE 3000', then on depicted route to HAROB, cross HAROB at or above 10000'.

g 343° to at or above 932', then direct CUSBU, then on track 348° to cross WUREL 3100', then on depicted route to HAROB, cross HAROB at or above 10000'.

g 343° to at or above 932', then direct NESOE, then on track 343° to cross WUREL 3100', then on depicted route to HAROB, cross HAROB at or above 10000'.

g 343° to at or above 932', then direct DODVE, then on track 341° to cross WUREL 3100', then on depicted route to HAROB, cross HAROB at or above 10000'.

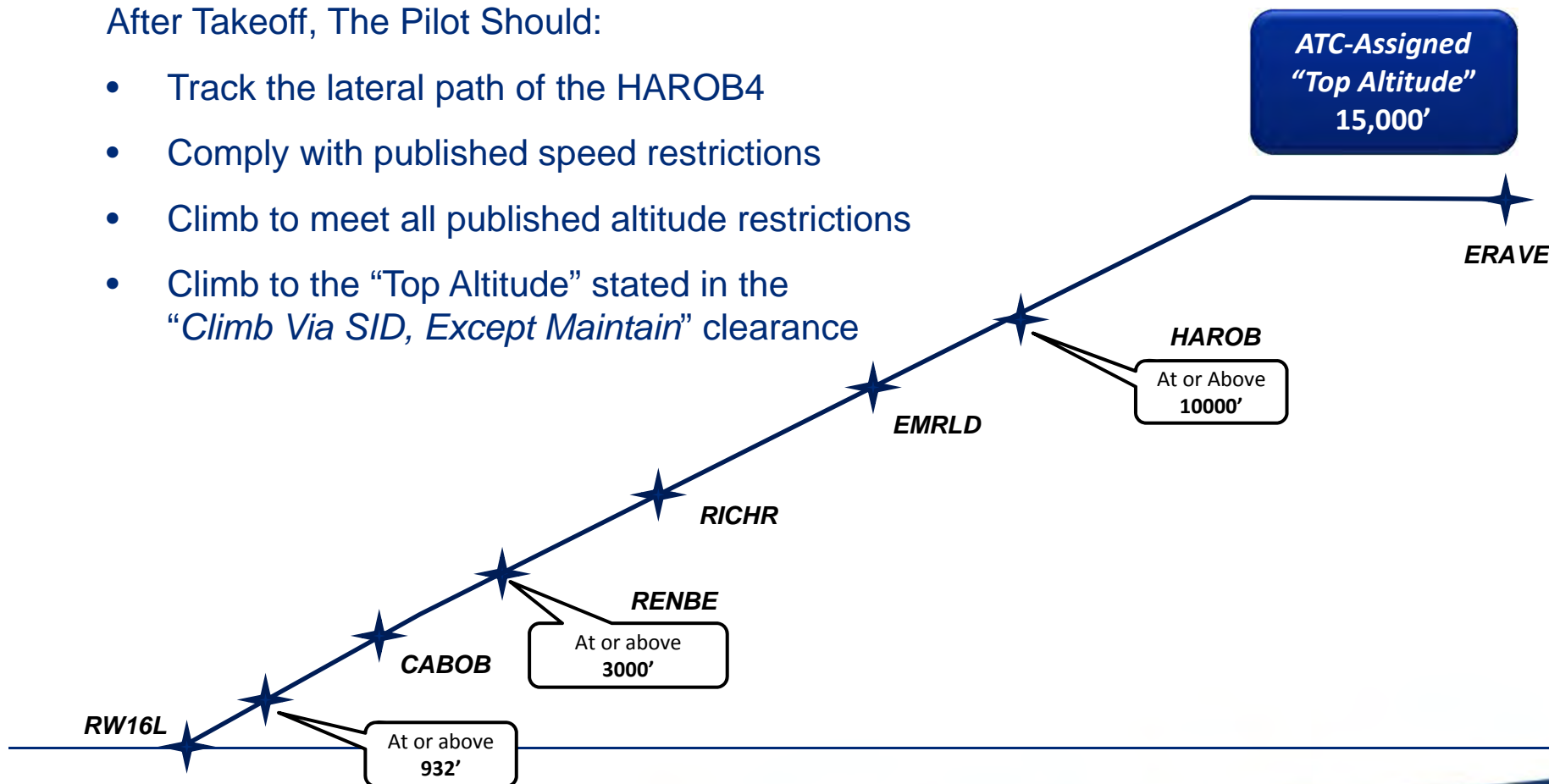
ROUTING

ion. EXPECT filed altitude/flight level 15 NM from SEA.

“Climb Via SID, Except Maintain...”

After Takeoff, The Pilot Should:

- Track the lateral path of the HAROB4
- Comply with published speed restrictions
- Climb to meet all published altitude restrictions
- Climb to the “Top Altitude” stated in the “Climb Via SID, Except Maintain” clearance



KLAS/LAS
McCARRAN INTL

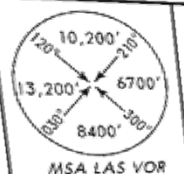
LAS VEGAS Departure (R)
133.95

Apt Elev
2181'

Trans level: FL180 Trans alt: 18000'

JEPPESEN LAS VEGAS, NEV
7 JAN 11 (10-3G) (11-13) 21m RNAV SID

1. DME/DME/IRU or GPS required.
2. RNAV 1.
3. RADAR required.
4. For non-GPS equipped aircraft BLD and LAS DME must be operational.



MILFORD
MLF

STAAV FOUR RNAV DEPARTURE
(STAAV4.STAAV)

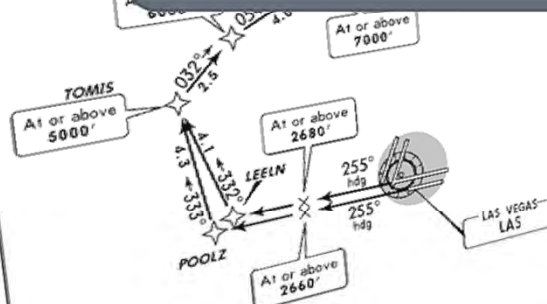
SPEED MAX 220 KT UNTIL BATIS

BRYCE CANYON
BCE

Assign A "Top Altitude" That Differs From That Published On A SID

ATC Voice:

"Cleared...STAAV Four Departure, Milford Transition,
Climb Via SID, Except Maintain One-Three Thousand..."



This SID requires take-off minimums after standard minimums, refer to airport chart: Rwy 25L, 7L/R, 18L/R: Not authorized by ATC. Rwy 25L: Standard for lower than standard, if authorized, with ATC climb of 350' per NM to 13000'. Rwy 25R: 300-2 or standard (for lower than standard, if authorized) with minimum climb standard, if authorized, with ATC climb of 350' per NM to 4500'. ATC climb of 350' per NM.

ALTITUDE

MAINTAIN
FL 190

RWY	Direct distance from McCarran Intl (Rwy 25L) to: POOLZ 6 NM (Rwy 25R) to: LEELN 6 NM	INITIAL CLIMB	ROUTING
25L	Climb heading 255° to at or above 2660' then direct POOLZ, then via 333° track to TOMIS	At or above 2680'	Climb heading 255° to at or above 2660' then direct POOLZ, then via 332° track to TOMIS
25R	Climb heading 255° to at or above 2660' then direct LEELN, then via 332° track to TOMIS	At or above 2660'	From TOMIS via 032° track to BATIS, then via 054° track to MEDOE, then via 074° track to STAAV. Then via transition. EXPECT filed altitude 10 minutes after departure.

ALTITUDE
MAINTAIN
FL 190

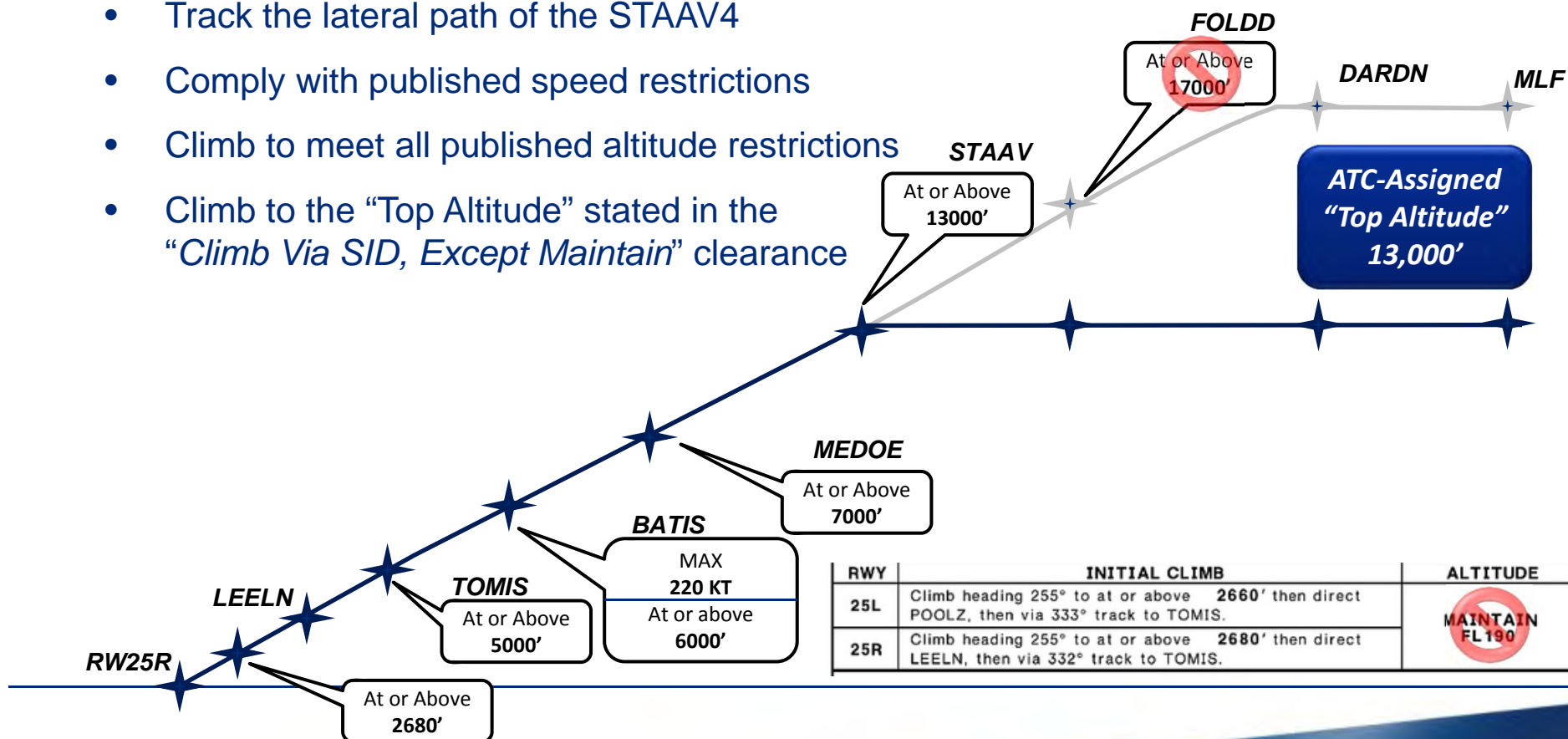
Grd speed	75	100	150	200	250	300
315' per NM	391	413	435	457	479	501
350' per NM	413	435	457	479	501	523

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“Climb Via SID, Except Maintain...”

After Takeoff, The Pilot Should:

- Track the lateral path of the STAAV4
- Comply with published speed restrictions
- Climb to meet all published altitude restrictions
- Climb to the “Top Altitude” stated in the “Climb Via SID, Except Maintain” clearance



Pilot/Controller Initial Contact Phraseology

Pilot Must Provide The “Top Altitude” On Initial Contact
When Climbing With A “*Climb Via, Except Maintain*” Altitude Assignment

“Las Vegas Departure, Gulfstream November One,
Leaving Two Thousand Seven Hundred
For One-Three Thousand,
Climbing Via The STAAV Four Departure”

“Gulfstream November One,
Las Vegas Departure, Radar Contact”



“Climb Via”

Applications After Takeoff

- Issue a clearance to resume vertical navigation on a SID after an ATC-issued interim altitude assignment
 - *“Climb Via SID”*
- Change a waypoint crossing restriction:
 - *“Climb Via SID Except Cross MKALA At Or Above Seven Thousand”*
- Issue a revised “Top Altitude” after departure:
 - *“Climb Via SID Except Maintain Flight Level Three Zero Zero”*
- Clear an aircraft to a fix & to resume vertical navigation on a SID:
 - *“Proceed Direct DVINE, Then Climb Via The Suzan Two Departure”*
 - *“Proceed Direct ROCKR, Cross ROCKR At Or Above One Zero Thousand, Climb Via The BIZEE Two Departure”*

ATC Intervention On A SID

- ATC will issue an altitude to maintain and all appropriate altitude restrictions when a vector will take the aircraft off an assigned procedure that contains altitude instructions or the previously issued clearance included crossing restrictions
- ATC must advise the pilot what to expect when the vector is completed
- Phraseology:
 - *“Lear Two Three Mike X-ray, Fly Heading One Five Zero, Vectors For Spacing, Maintain One Zero Thousand, Expect To Resume The EPPKE Two Departure”*
- Pilots may consider the SID canceled, unless the controller adds “*expect to resume [SID name] departure*”, in which case pilots should be prepared to rejoin the SID at a subsequent fix or procedure leg

ATC Intervention On A SID

- If ATC interrupts lateral/vertical navigation while an aircraft is flying a SID, ATC must ensure obstacle clearance
- When issuing a “climb via” clearance to join a procedure, ATC must ensure obstacle clearance until the aircraft is established on the lateral and vertical path of the SID
- ATC will assign an altitude to cross if no altitude is depicted at a waypoint/fix, or when otherwise necessary/ required, for an aircraft on a direct route to a waypoint fix where the SID will be joined or resumed

Climb Via – Operational Application



KDEN/DEN
DENVER INTL

JEPPESEN
16 AUG 13 (10-3M) ESI 22 Aug

DENVER, COLO
RNAV SID

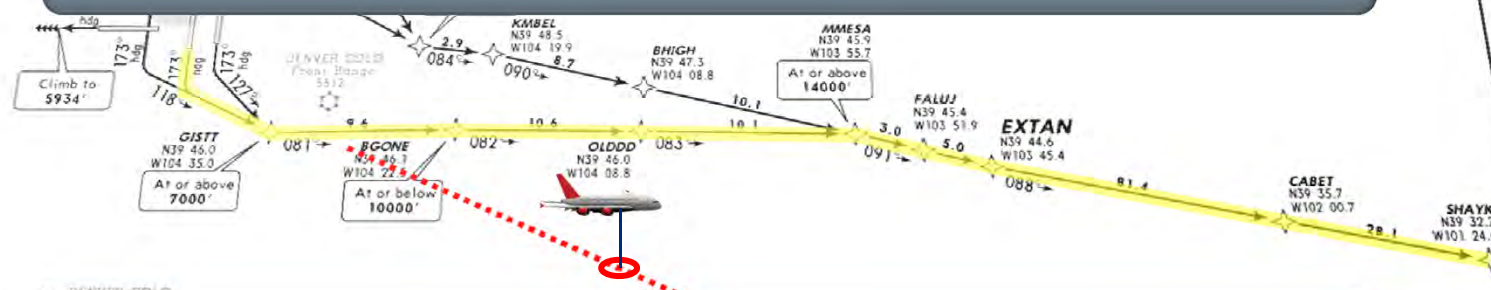
DENVER Departure # 128.25
Apt Elev See Graphic
Trans level: FL180 Trans alt: 18000
1. DME/DME/IRU or GPS required. 2. RNAV 1, 3 Turbojets only
4. Takeoff Rwy 8, 16L/R, 17L/R, 34L/R, 35L/R. RADAR required for non-GPS equipped aircraft. 5. Rwy 25. RADAR required
6. For non-GPS equipped aircraft TSC DME must be operational.
7. Accelerate to at or above 250 KT above 10000'. If slower speed is required to meet crossing restrictions, advise clearance delivery prior to taxi.

EXTAN THREE RNAV DEPARTURE
(EXTAN3.SHAHK)

Direct distance from Denver Intl
Rwys 8, 34L/R, 35L/R to: KIDNG 13 NM
Rwys 16L/R, 17L/R to: GISTT 7 NM
Rwy 25 to: EXTAN 43 NM

Initial ATC Clearance:

"Cleared EXTAN Three Departure, Climb Via SID"



After Passing GISTT, ATC Issues Heading Vector:

"Fly Heading One Two Zero, Vectors For Spacing,
Climb and Maintain One Four Thousand, Expect To Resume The EXTAN Departure"

RWY	INITIAL CLIMB
8	Climb heading 083° to intercept course 106° to cross KIDNG at or below 10000', then on track 084° to KMBEL, then on track 090° to cross track 090° to cross MMESA at or above 14000'.
16L/R, 17R	Climb heading 173° to intercept course 118° to cross GISTT at 7000', then on track 081° to cross BGONE at or below 10000', then on track 082° to OLDDD, then on track 083° to cross MMESA at or above 14000'.
17L	Climb heading 173° to intercept course 127° to cross GISTT at 7000', then on track 081° to cross BGONE at or below 10000', then on track 082° to OLDDD, then on track 083° to cross MMESA at or above 14000'.
25	Climb heading 263° to 5934', then continue climb heading 263° or as assigned by ATC for RADAR vectors to EXTAN.
34L/R, 35L/R	Climb heading 353° to 5934', then climbing RIGHT turn direct to cross KIDNG at or below 10000', then on track 084° to KMBEL, then on track 090° to BHIGH, then on track 090° to cross MMESA at or above 14000'.

ROUTING

On depicted route to SHAYK. **MAINTAIN FL230** if filed lower altitude. EXPECT higher filed altitude 10 minutes after departure.

14000'.
Rwy 16R. Standard (or lower than standard, if

- Fly heading 120 degrees
- Climb unrestricted to 14,000'
- Expect to resume EXTAN Three

OBSTACLES
For TAKEOFF OBSTACLE NOTES
(Rwys 16L, 25) see 10-30B1.

Gnd speed-KT	75	100	150	200	250	300
220' per NM	275	367	550	733	917	1100
225' per NM	281	375	563	750	938	1125
230' per NM	288	383	575	767	958	1150
240' per NM	300	400	600	800	1000	1200
245' per NM	308	408	613	817	1021	1225
250' per NM	313	417	625	833	1042	1250
260' per NM	325	433	650	867	1083	1300
280' per NM	350	467	700	933	1167	1400
400' per NM	500	667	1000	1333	1667	2000
450' per NM	563	750	1125	1500	1875	2250
465' per NM	581	775	1163	1550	1938	2325
500' per NM	625	833	1250	1667	2083	2500

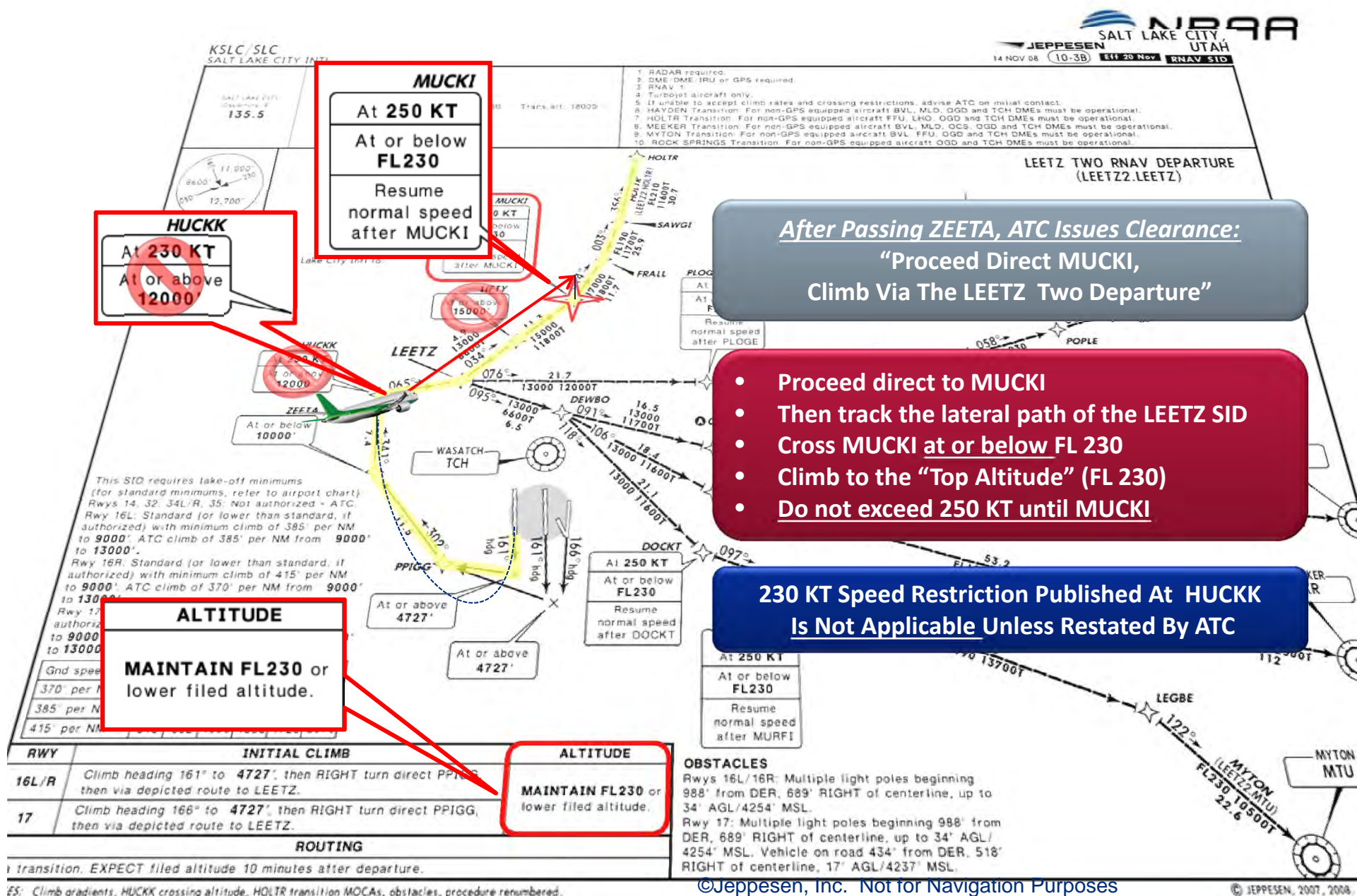
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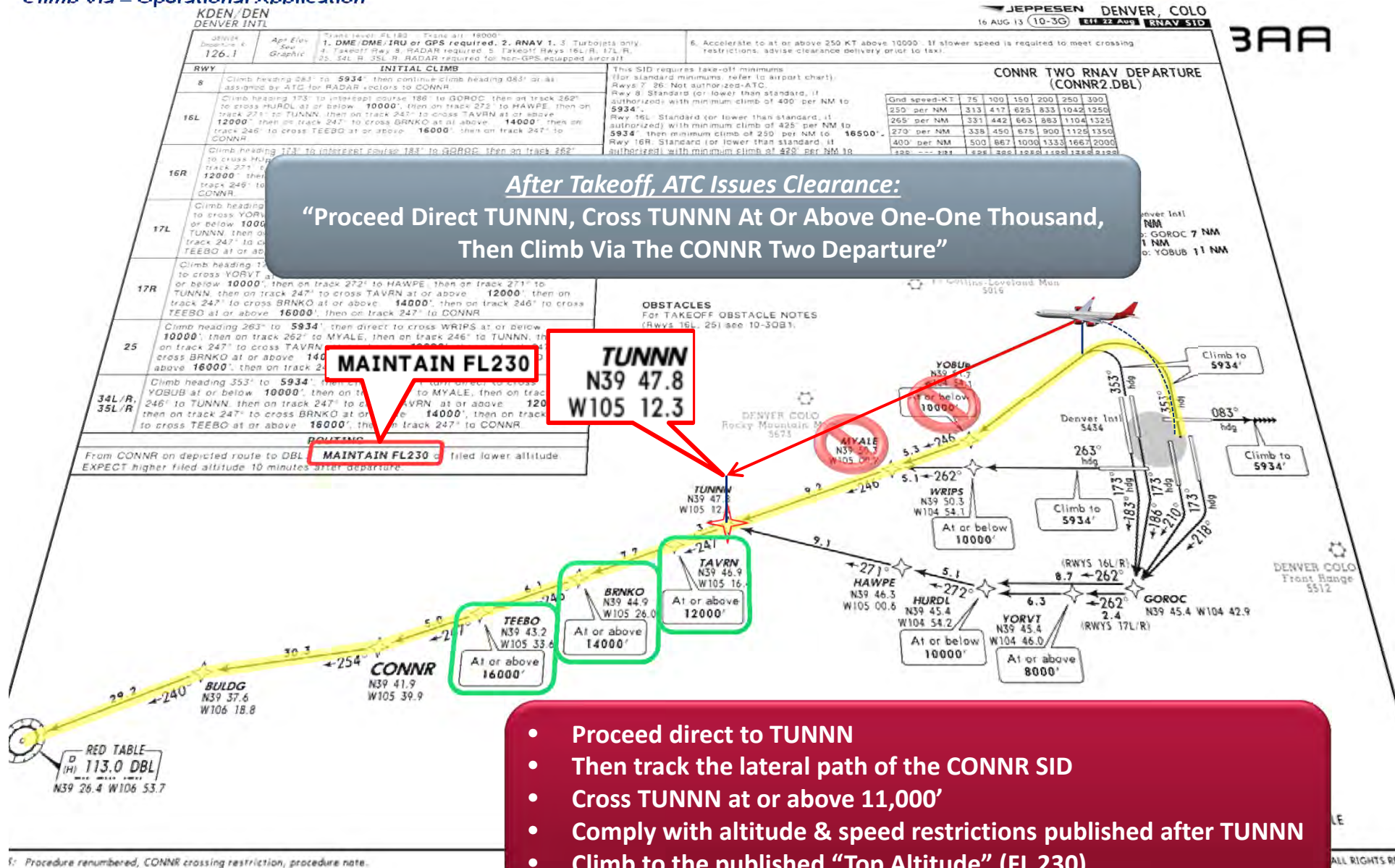
<ESC Exit>



Climb Via – Operational Application



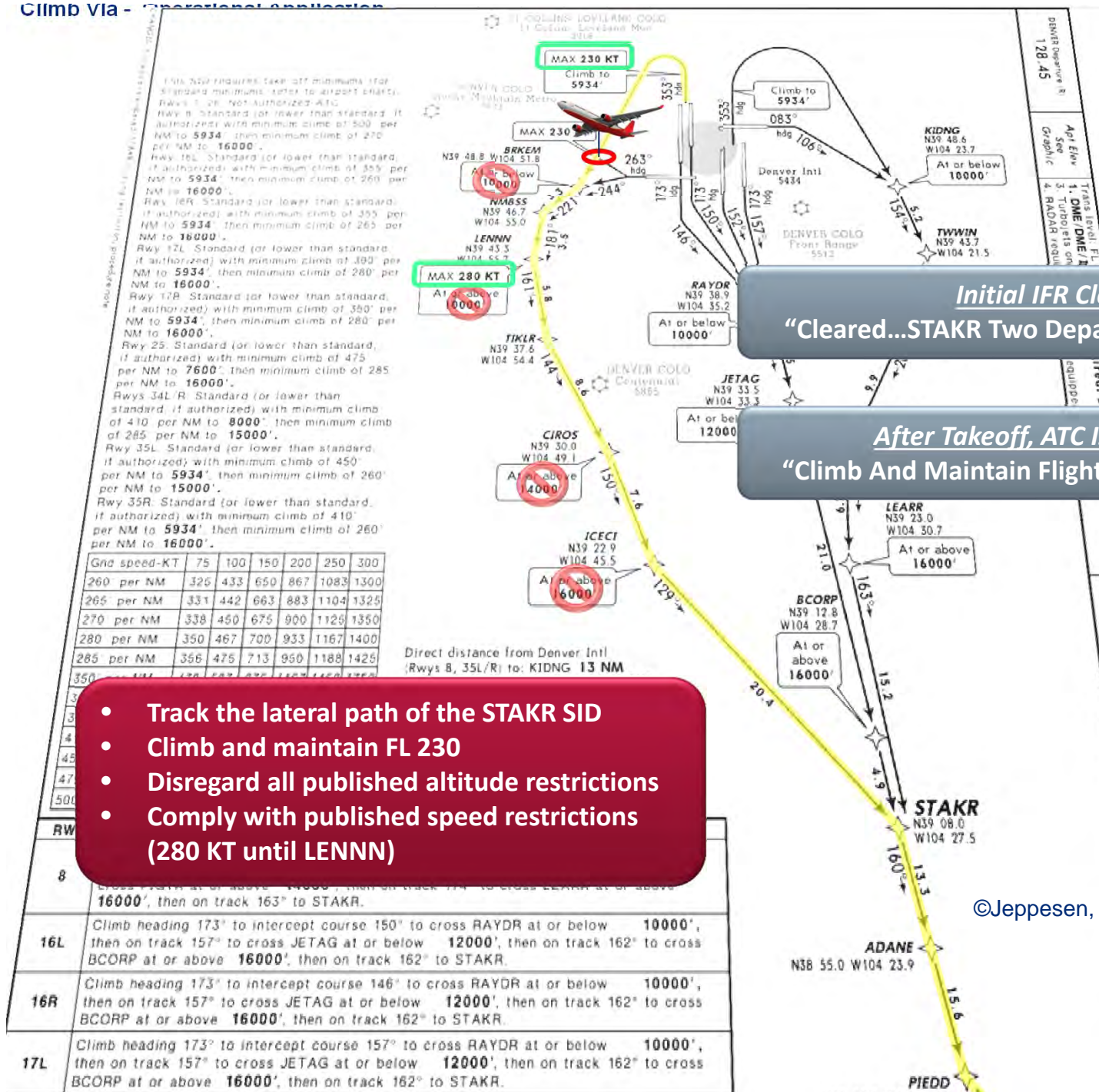
Climb Via – Operational Application



Unrestricted Climb

Phraseology: “Maintain” or “Climb & Maintain”

- Initial IFR clearance:
 - *“Cleared To ..., LOOP Six Departure, As Filed, Maintain Four Thousand”*
- After initial IFR clearance, but prior to or after takeoff:
 - *“Hawker Two Three Yankee, Climb And Maintain One-two Thousand”*
- Receipt of a “Maintain” or “Climb & Maintain” altitude clearance means:
 - All Published Altitude Restrictions **Are Canceled**
 - All Published Speed Restrictions **Remain In Effect**

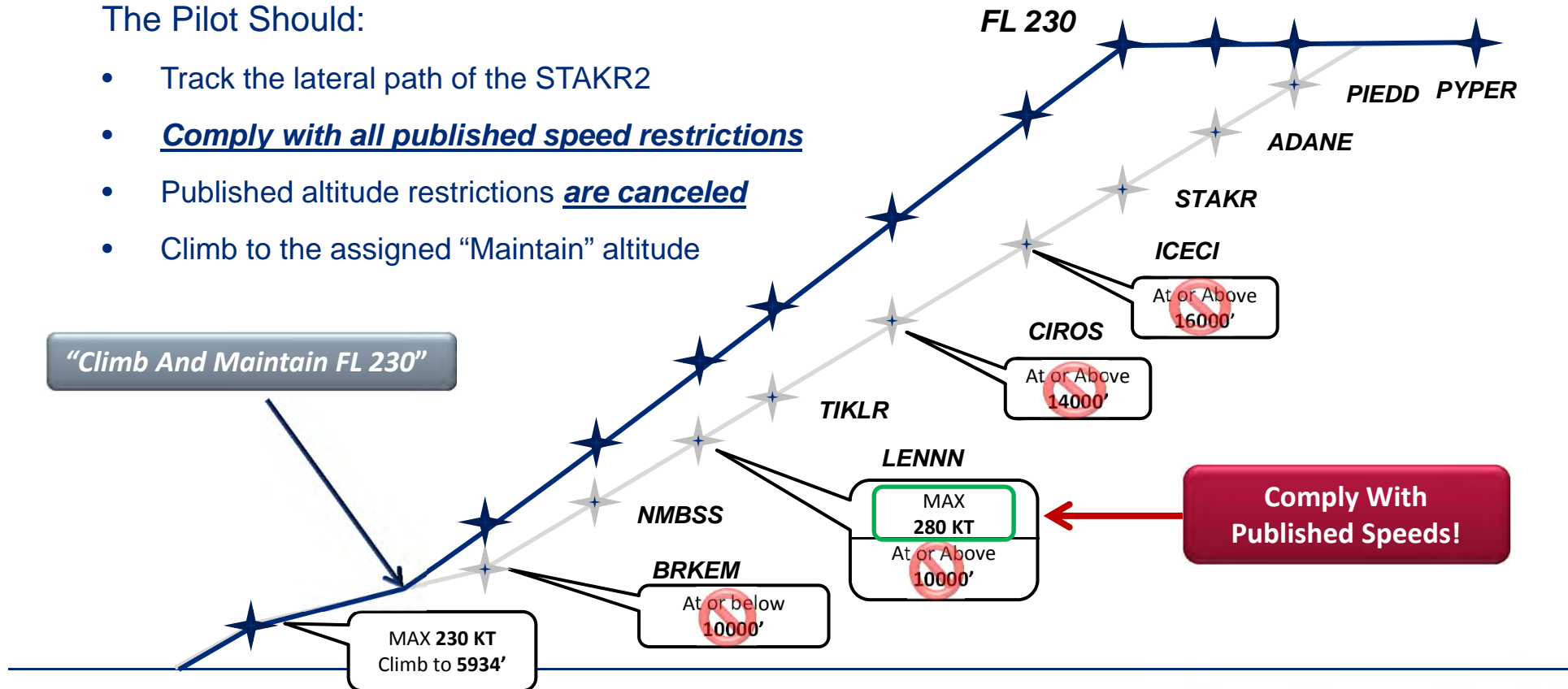


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“Maintain” or “Climb & Maintain...”

The Pilot Should:

- Track the lateral path of the STAKR2
- **Comply with all published speed restrictions**
- Published altitude restrictions **are canceled**
- Climb to the assigned “Maintain” altitude



Speed Restrictions Published On A SID

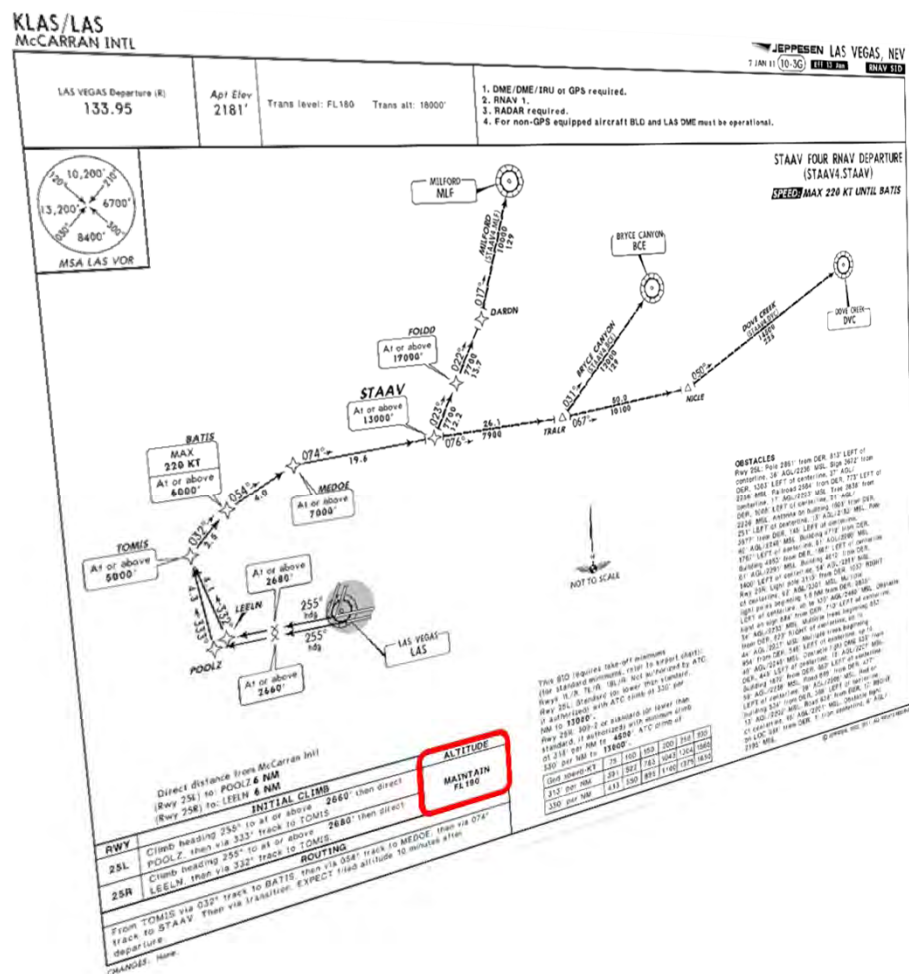
- When cleared along a route or procedure that contains published speed restrictions, pilots must comply with those speed restrictions independent of a “Climb Via” or “Climb & Maintain” clearance
- ATC anticipates pilots will begin accelerating after passing a speed restriction commensurate with normal aircraft operations, but will not exceed the next speed restriction, if any, published on the SID
- If vectored off a SID route segment where a published speed restriction applies, pilots are expected to maintain the published speed restriction until further advised
- Absent any qualifying instructions, issuance of a “Climb Via” clearance cancels a previously issued ATC speed adjustment and provides pilot discretion to adjust speed while requiring compliance with upcoming restrictions
- ATC may require compliance with previously issued speed adjustments using phraseology:
 - “Proceed to (WP name), then climb via...”
 - “Maintain (speed) until (WP name), then climb via...”
 - “Cross (WP name) at (speed) then climb via....”
- Where there are no upcoming speed restrictions, issuance of a “Proceed direct (WP name), climb via” cancels a previously issued speed adjustment and authorizes speed at pilot's discretion as appropriate for the phase of flight, ensuring compliance with 14 CFR 91.117

Pre-Departure Clearances

IFR Clearance Received Via Data Link Service

- “Climb Via” clearance is always provided in the “Remarks”* section of the PDC
- The ATC assigned departure (SID or ODP) may be furnished in the:
 - “Route”* section, or
 - “Remarks”* section
- The filed departure procedure is listed in the “filed flight plan” section of the PDC
- The ATC assigned departure may differ from that filed in the IFR flight plan
- **Fly the ATC-assigned departure, not the departure that was filed!**
- Insure the filed departure procedure is uplinked to the FMS
- Verify the correct departure procedure in the FMS

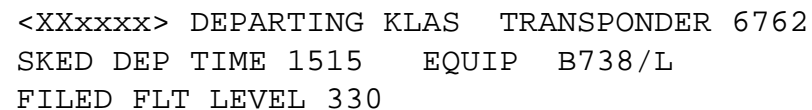
* Note: The “Route” & “Remarks” sections are generic descriptions of the elements of a typical the PDC message. They are not necessarily specific sections in the PDC as the format of these messages will vary with FOC or service provider



FLIGHT XXXxxx/03 KLAS KDEN
PDC
SWA539 7342 KLAS
B738/L P1430
370
KLAS STAAV4 DVC WOLFF
CREDE2 KDEN
CLIMB VIA SID
DEP CONTROL 125.9
END OF MESSAGE

Note: PDC Format Varies With AOC or Service Provider

- ATC-assigned SID in the “ROUTE” section
- “Climb Via SID” clearance issued in the “REMARKS” section



STAAV4 MLF

CLIMB VIA SID, EXCEPT MAINTAIN 13000

Note: PDC Format Varies With AOC or Service Provider

- ATC-assigned SID in the “ROUTE” section
- “Climb Via SID” clearance issued in the “REMARKS” section
- ATC-assigned “Top Altitude” of 13,000’ in the “REMARKS” section

Note: PDC Format Varies With AOC or Service Provider

PDC Received: 2/14/2014 13:30:39

Aircraft Reg: N-----

Aircraft Type: GALX/Q

Departure Airport KSEA

Proposed (UTC) 1600 UTC

Arrival Airport: KSFO

Transponder: 2641

Altitude: FL 400

Filed Route: ELMAA9 ELMAA OLM J126 RBL GOLDN6

Amended Route: -ERAVE Q1 PYE GOLDN6-

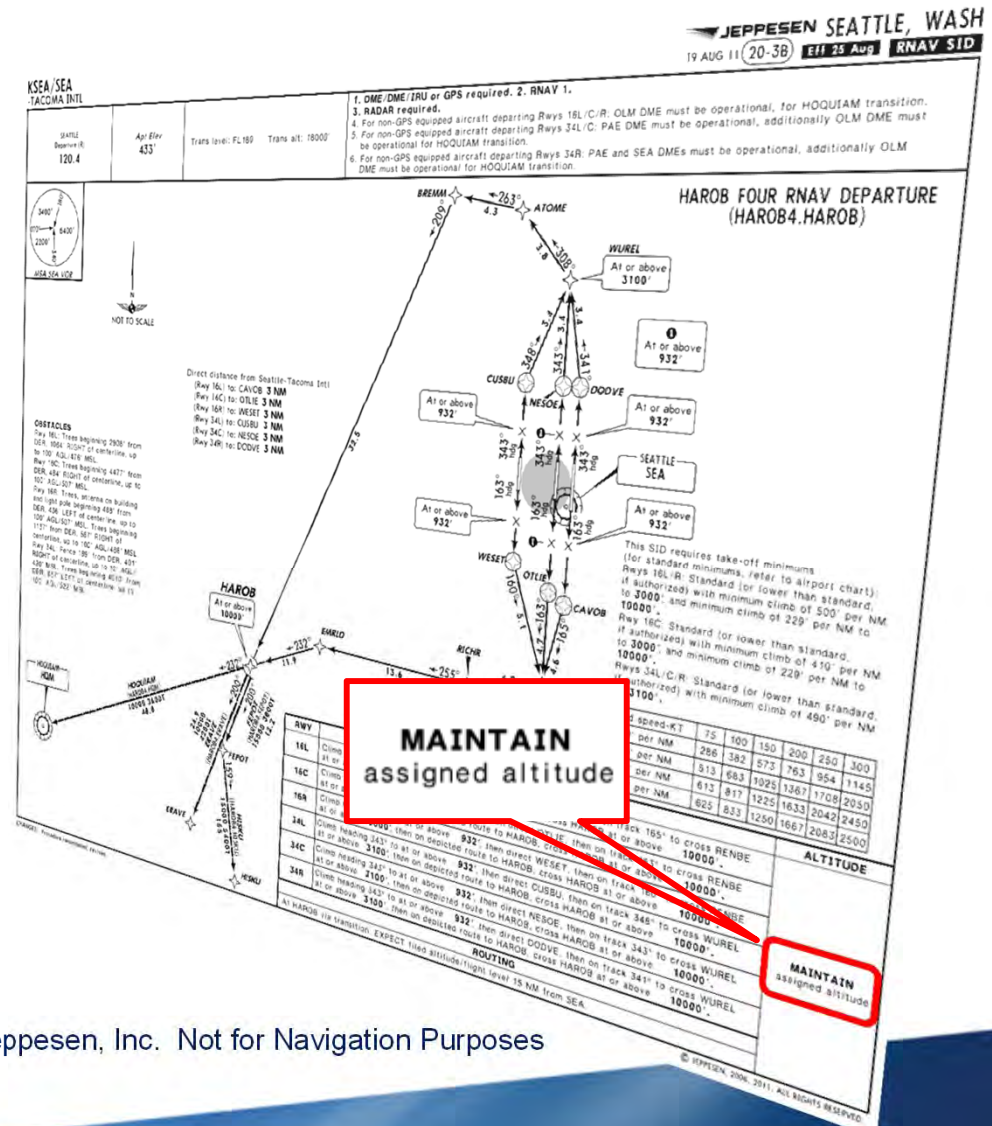
Remarks: @TCAS EQUIPPED AND SVCB***

CLEARED HAROB4 DEP ERAVE TRSN

CLIMB VIA SID, EXCEPT MAINTAIN 5000

DEP CONTROL 120.8

- ATC-assigned SID in the “REMARKS” section
- “Climb Via SID” is always issued in the “REMARKS” section
- Verify FMS contains the ATC-assigned SID (HAROB4), not the filed SID (ELMAA9)



Climb Via – PDC

Note: PDC Format Varies With AOC or Service Provider

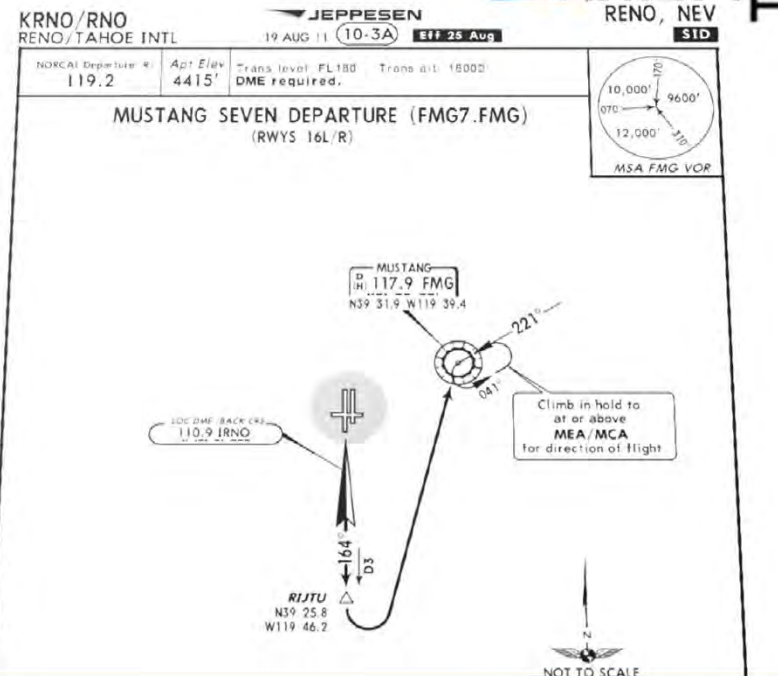
PDC N-----
KRNO KSEA
RECEIVED AT: 29-Apr-13 1922Z

ATC Clearance
FMG J92 WNDEL LKV

Filed Flight Plan
KRNO FMG WNDEL LKV J67 BTG
HAWKZ3 KSEA

Remarks
CLEARED FMG7 DEP
CLIMB VIA SID
SQUAWK 2021

Other Info
REQUESTED ALT: 410
PROPOSED ETD: 2020z
CLERANCE ETD: Z
AIRCRAFT; F2TH/Q
END OF CLEARANCE



“Climb Via” May Be Applied To A Conventional SID

INITIAL CLIMB

Climb to **10000'** or assigned altitude via IRNO localizer SOUTH course to RIJTU/D3 IRNO, then LEFT turn direct to FMG.

ROUTING

Climb in FMG holding pattern to depart FMG at or above MEA/MCA for direction of flight. EXPECT clearance to requested altitude five minutes after departure.

points beginning 740' from DER, 500' LEFT of centerline, up to 95' AGL/4510' MSL. Terrain beginning 2784' from DER, 990' RIGHT of centerline, up to 288' AGL/4703' MSL.	100 speed (KTS)	75	100	130	150	175	200	225	250
	525' per NM	658	875	1313	1750	2188	2625		
	740' per NM	925	1233	1850	2467	3083	3700		

INITIAL CLIMB

Climb to **10000'** or assigned altitude via IRNO localizer SOUTH course to RIJTU/D3 IRNO, then LEFT turn direct to FMG.

ROUTING

Climb in FMG holding pattern to depart FMG at or above MEA/MCA for direction of flight. EXPECT clearance to requested altitude five minutes after departure.

CHANGES: Glider activity note removed.

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Note: PDC Format Varies With AOC or Service Provider

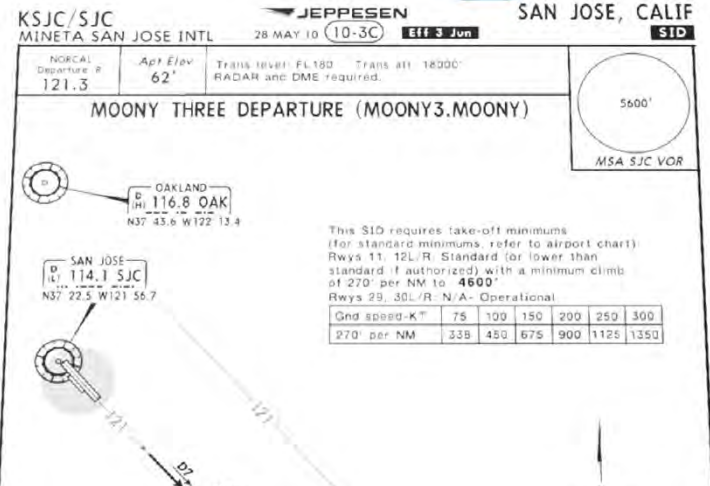
PDC N-----
KSJC KLAS
RECEIVED AT: 22-Jun-13 2019Z

ATC Clearance
MOONY3 MOONY
THEN AS FILED

Filed Flight Plan
KSJC MOONY PMD DAG KEPEC3 KLAS

Remarks
CLIMB AND MAINTAIN 10000
SQUAWK 5247

Other Info
REQUESTED ALT: 410
PROPOSED ETD: 2020z
CLERANCE ETD: Z
AIRCRAFT; LJ45/Q
END OF CLEARANCE



PDC Clearance Using
"Climb and Maintain" Instead of "Climb Via"

RWY	INITIAL CLIMB
11	Climbing LEFT turn to intercept SJC R-121 to NEVSE.
12L	Climbing RIGHT turn to intercept SJC R-121 to NEVSE.
12R	Climb heading 121° and SJC R-121 to NEVSE.
ROUTING	
Turn LEFT heading 090° to intercept OAK R-121 to MOONY. Then via transition or assigned route. Aircraft filing FL240 or above EXPECT further clearance to filed altitude ten minutes after departure.	

RWY	INITIAL CLIMB
11	Climbing LEFT turn to intercept SJC R-121 to NEVSE.
12L	Climbing RIGHT turn to intercept SJC R-121 to NEVSE.
12R	Climb heading 121° and SJC R-121 to NEVSE.
ROUTING	
Turn LEFT heading 090° to intercept OAK R-121 to MOONY. Then via transition or assigned route. Aircraft filing FL240 or above EXPECT further clearance to filed altitude ten minutes after departure.	

CLIMB VIA DEPARTURE PHRASEOLOGY						
PHASE OF FLIGHT		SCENARIO	CONTROLLER		PILOT	
			ACTION	PHRASEOLOGY	ACTION	PHRASEOLOGY
INITIAL IFR CLEARANCE		Assign a SID or ODP with the initial IFR clearance.	<ul style="list-style-type: none">Assign a SID or ODP.Assigned an altitude when a "Top Altitude" is not published in the SID route description.	<i>"American Two, Cleared To Reynolds Airport; DAVID Two Departure, Kingham Transition; Then, As Filed, Maintain Niner Thousand..."²</i>	<ul style="list-style-type: none">Comply with the lateral path of the DAVID Two SID, Kingham transition.Climb unrestricted up to and then maintain 9000' MSL.Comply with any published speed restrictions.	On Initial contact: <i>"American Two, Leaving Six Hundred, Climbing To Niner Thousand"</i>
			<ul style="list-style-type: none">Assign a SID with a "Top Altitude" published in the SID route description. The assigned altitude may be omitted and pilots instructed to "climb via SID" when a "Top Altitude" is published in the SID route description.	<i>"American Two, Cleared To Reynolds Airport; DAVID Two Departure, Kingham Transition; Then, As Filed, <u>Climb Via SID</u>..."²</i>	<ul style="list-style-type: none">Comply with the lateral path of the DAVID Two SID, Kingham transition.Comply with all published speed & altitude restrictions while climbing to the SID's published "Top Altitude" (e.g. FL 240).	On Initial contact: <i>"American Two, Leaving Six Hundred, Climbing Via The DAVID Two Departure..."</i>
			<ul style="list-style-type: none">Assign a SID that has published altitude restrictions but the "Top Altitude" is not published or must be changed.Use the phrase "climb via SID except maintain" to assign the "Top Altitude".	<i>"American Two, Cleared To Reynolds Airport; DAVID Two Departure, Kingham Transition; Then, As Filed, <u>Climb Via SID Except Maintain Flight Level Two Zero Zero</u>..."²</i>	<ul style="list-style-type: none">Comply with the lateral path of the DAVID Two SID, Kingham transition.Comply with any published speed & altitude restrictions.Climb to the ATC issued "Top Altitude" (FL 200) instead of the SID's published "Top Altitude" (e.g. FL 240).	On Initial contact with departure control: <i>"American Two, Leaving Six Hundred For Flight Level Two Zero Zero Climbing Via The DAVID Two Departure..."</i>
AFTER TAKEOFF	ALTITUDE	ATC desires an unrestricted climb-out and cancels all altitude restrictions.	<ul style="list-style-type: none">Clear aircraft for unrestricted climb.Cancel all published altitude restrictions.	<i>"American Two, Climb And Maintain Flight Level Two Four Zero"²</i>	<ul style="list-style-type: none">Track the lateral path of the SID.Climb from the current altitude to FL 240.All published altitude restrictions are canceled.<u>Speed restrictions remain in effect unless the controller explicitly cancels the speed restrictions.</u>	<i>"American Two, Climb And Maintain Flight Level Two Four Zero"</i>
		ATC must interrupt the climb and assign an interim altitude to maintain while the aircraft continues to follow the SID's lateral path.	<ul style="list-style-type: none">Issue an altitude to maintain.ATC must ensure obstacle clearance until the aircraft is re-established on the vertical path of the SID.	<i>"American Two, Climb And Maintain Niner Thousand"²</i>	<ul style="list-style-type: none">Track the lateral path of the SID.Climb from the current altitude to 9000'.All published altitude restrictions are canceled.<u>Speed restrictions remain in effect unless the controller explicitly cancels the speed restrictions.</u>	<i>"American Two, Climb And Maintain Niner Thousand"</i>
		ATC desires that the aircraft resume climb to the original "Top Altitude" while complying with all published altitude and speed restrictions on the SID.	<ul style="list-style-type: none">Instruct aircraft to resume climb & to comply with published altitude and speed restrictions.	<i>"American Two, Climb Via SID"²</i>	<ul style="list-style-type: none">Track the lateral path of the SID.Begin climb from the last assigned altitude to comply with all published altitude restrictions.Comply with published speed restrictions.	<i>"American Two, Climb Via SID"</i>
		During the climb, ATC must assign an interim "Top Altitude" or assign a "Top Altitude" that differs from that published on the SID.	<ul style="list-style-type: none">Instruct aircraft to climb via the SID to a specific fix published on the SID.Then assign the new "Top Altitude".	<i>"American Two, Climb Via SID Except After BARET, Maintain Flight Level One Niner Zero"²</i>	<ul style="list-style-type: none">Track the lateral path of the SID.Comply with published speed restrictions.Comply with published altitude restrictions up to BARET, then climb & maintain the ATC-assigned "Top Altitude".	<i>"American Two, Climb Via SID Except After BARET, Maintain Flight Level One Niner Zero"</i>
		Established on the SID, ATC must assign an altitude at a waypoint/fix that differs from the altitude restriction published on a SID.	<ul style="list-style-type: none">Instruct aircraft to climb via the SID.Amend the altitude restriction at the desired waypoint/fix.	<i>"American Two, Climb via SID Except Cross MKALA At Or Above Seven Thousand..."²</i>	<ul style="list-style-type: none">Track the lateral path of the SID.Comply with published speed restrictions.Comply with published altitude restrictions, except cross MKALA at or above 7000'.	<i>"American Two, Climb via SID Except Cross MKALA At Or Above Seven Thousand..."</i>

CLIMB VIA DEPARTURE PHRASEOLOGY						
PHASE OF FLIGHT	SCENARIO	CONTROLLER		PILOT		
		ACTION	PHRASEOLOGY	ACTION	PHRASEOLOGY	
AFTER TAKEOFF	SPEED	ATC must assign a speed restriction to a departing aircraft climbing in conjunction with a "climb via" clearance.	<ul style="list-style-type: none"> Assign a speed to maintain until a waypoint/fix on the SID. Then instruct aircraft to climb via the SID. <i>Issuing speed adjustments to aircraft flying procedures with published speed restrictions may impact the pilot's ability to fly the intended flight profile of the procedure</i>	<i>"American Two, Cross ALISA At Two Two Zero Knots Then Climb Via The DAVID Two Departure."</i>	<ul style="list-style-type: none"> Track the lateral path of the SID. Maintain speed 220 KT until crossing ALISA, then comply with published speed restrictions. Climb to comply with all published altitude restrictions. 	<i>"American Two, Cross ALISA At Two Two Zero Knots Then Climb Via The DAVID Two Departure."</i>
		ATC must amend the altitude restriction published at a waypoint/fix, after which the aircraft is to continue climb and comply with published altitude restrictions. In addition, ATC must assign a speed to maintain during the climb instead of the published speeds on the SID.	<ul style="list-style-type: none"> Assign an altitude to cross the waypoint/fix. Then issue "Climb Via" clearance; however, assign a speed to maintain in place of the published speed restrictions. 	<i>"American two, Cross ALISA At One Zero Thousand, Then Climb Via The DAVID Two Departure, Except Maintain Two Two Zero Knots."</i>	<ul style="list-style-type: none"> Track the lateral path of the SID. Climb to cross ALISA at 10,000', then comply with published altitude restrictions. Maintain speed 220 KT <u>Published speed restrictions are canceled.</u> 	<i>"American Two, Cross ALISA At One Zero Thousand, Then Climb Via The DAVID Two Departure, Except Maintain Two Two Zero Knots."</i>
	ROUTE	ATC must issue a heading and vector the aircraft off the lateral path of a SID with altitude restrictions.	<ul style="list-style-type: none"> Assign a heading to maintain. State the purpose of the vector. Assign an altitude to maintain. Advise pilot to expect to resume SID. 	<i>"American Two, Fly Heading Zero Niner Zero, Vectors To Spacing. Maintain Eight Thousand, Expect To Resume The DAVID Two Departure"</i>	<ul style="list-style-type: none"> Fly heading 090. Maintain 8000' Be prepared to resume the DAVID Two SID. Do not sequence FMS beyond the SID. 	<i>American Two, Fly Heading Zero Niner Zero. Maintain Eight Thousand."</i>
		Clear an aircraft to re-join the SID at a waypoint/fix <u>with</u> a published altitude restriction then to comply with published altitude & speed restrictions.	<ul style="list-style-type: none"> Clear the aircraft to a waypoint/fix with a published restriction. Instruct the aircraft to climb via SID. Ensure obstacle clearance until the aircraft is established on the lateral and vertical path of the SID. 	<i>"American Two, Proceed Direct DVINE, Climb Via The DAVID Two Departure"</i>	<ul style="list-style-type: none"> Proceed direct to DVINE & resume the DAVID Two SID. Climb to comply with the altitude published at DVINE. Climb to comply with the published altitude & speed restrictions. 	<i>"American Two, Proceed Direct DVINE, Climb Via The DAVID Two Departure"</i>
		Clear an aircraft to re-join the SID at a waypoint/fix <u>without</u> a published altitude restriction, and then to comply with published altitude & speed restrictions.	<ul style="list-style-type: none"> Clear the aircraft to a waypoint fix & assign an altitude to cross waypoint/fix. Instruct the aircraft to climb via SID. Ensure obstacle clearance until the aircraft is established on the lateral and vertical path of the SID. 	<i>"American Two Proceed Direct DENIS, Cross DENIS At Or Above One Zero Thousand, Then Climb Via The DAVID Two Departure"</i>	<ul style="list-style-type: none"> Proceed direct to DENIS & resume the DAVID Two SID. Climb to cross DENIS at or above 10,000' Climb to comply with the published altitude & speed restrictions. 	<i>"American Two Proceed Direct DENIS, Cross DENIS At Or Above One Zero Thousand, Then Climb Via The DAVID Two Departure"</i>
	GENERAL	Instruct an aircraft to resume SID that contains speed and/or altitude restrictions	<ul style="list-style-type: none"> Issue/reissue all applicable restrictions. Advise aircraft to comply with restrictions or resume published speed. 	<i>"American Two , Resume DAVID Two Departure, Comply With Restrictions"</i>	<ul style="list-style-type: none"> Comply with the altitude & speed restrictions published on the DAVID Two SID. 	<i>"American Two, Resume DAVID Two Departure. Comply With Restrictions"</i>

Briefing Topics – Climb Via (CV)



FAA “Climb Via” Video

Briefing Topics – Descend Via (DV)



Terminology



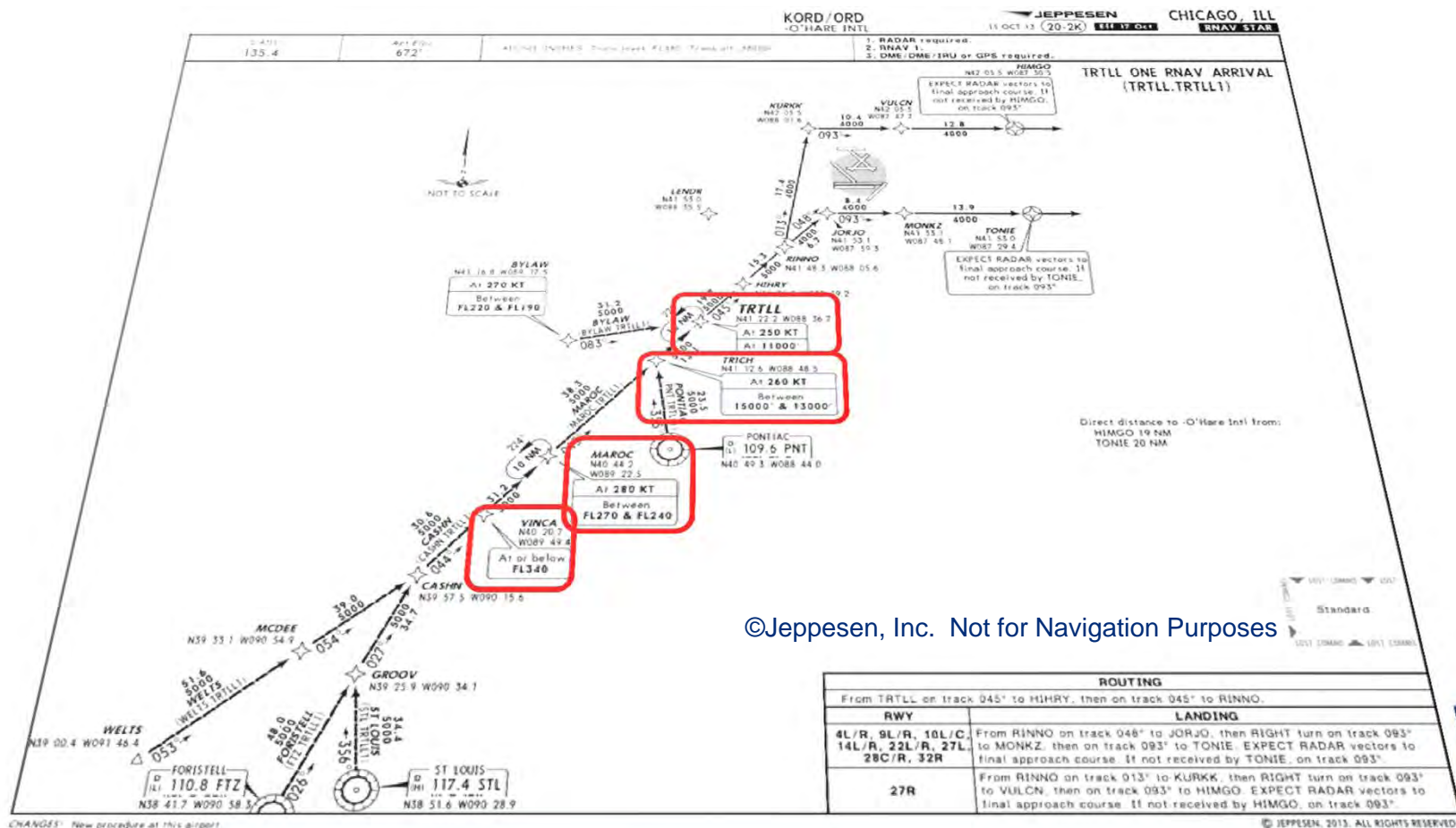
Operational Application

[illegible]

[Return To Briefing Topic Main Menu](#)

Descend Via:

An abbreviated ATC clearance that requires compliance with a published procedure lateral path and associated speed restrictions and provides a pilot-discretion descent to comply with published altitude restrictions.



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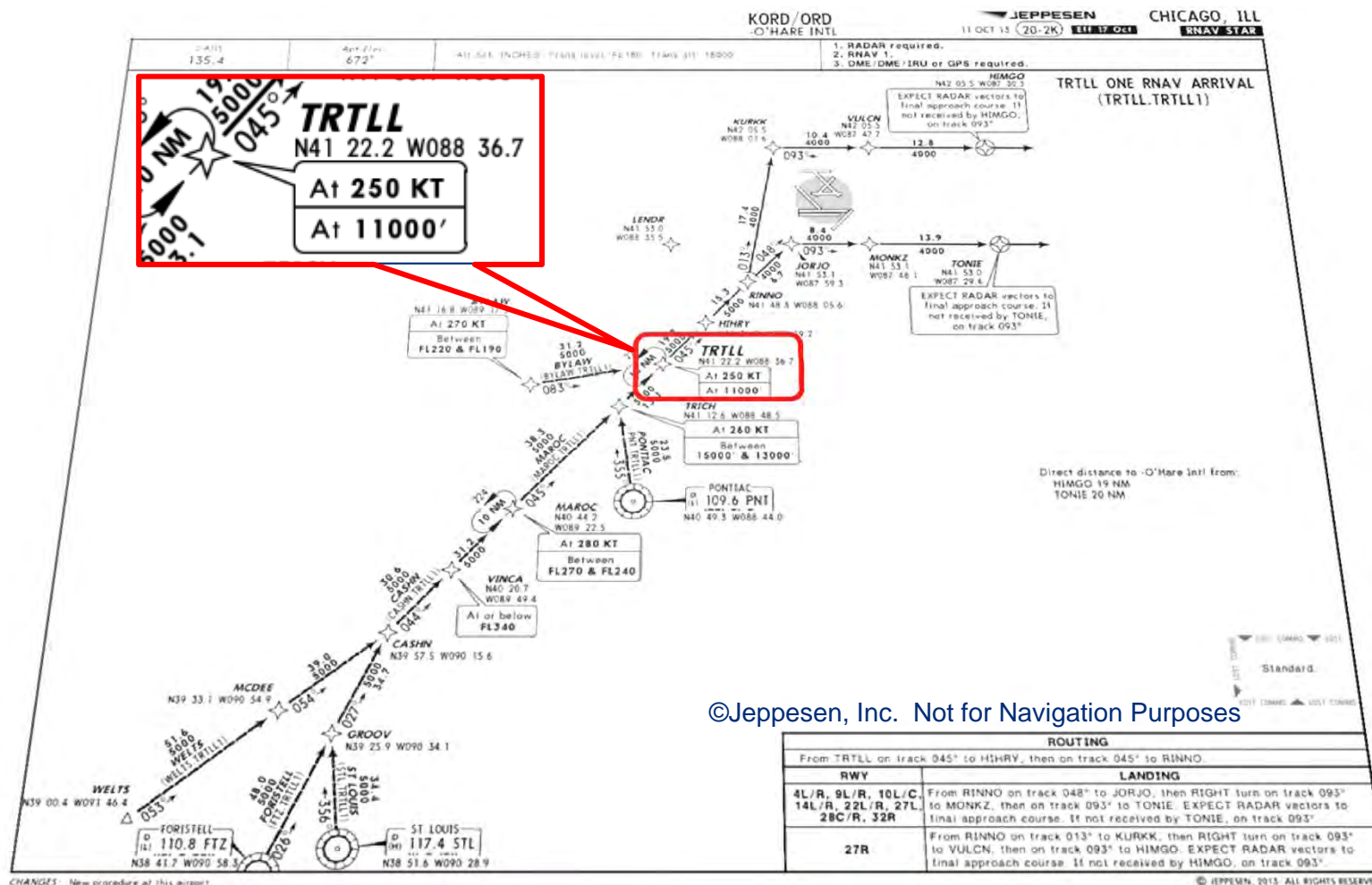
Descend Via (AIM 5-4-1 a 2)

Authorizes The Pilot To

- Descend at pilot's discretion to meet published restrictions and laterally navigate on a STAR
- When cleared to a waypoint depicted on a STAR, to descend from a previously assigned altitude at pilot's discretion to the altitude depicted at the waypoint
- Once established on the depicted arrival, to descend and to meet all published or assigned altitude and/or speed restrictions

Bottom Altitude:

In reference to published altitude restrictions on a STAR or STAR runway transition, the lowest altitude authorized.



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Bottom Altitude

In reference to published altitude restrictions on a STAR or STAR runway transition, the lowest altitude authorized.

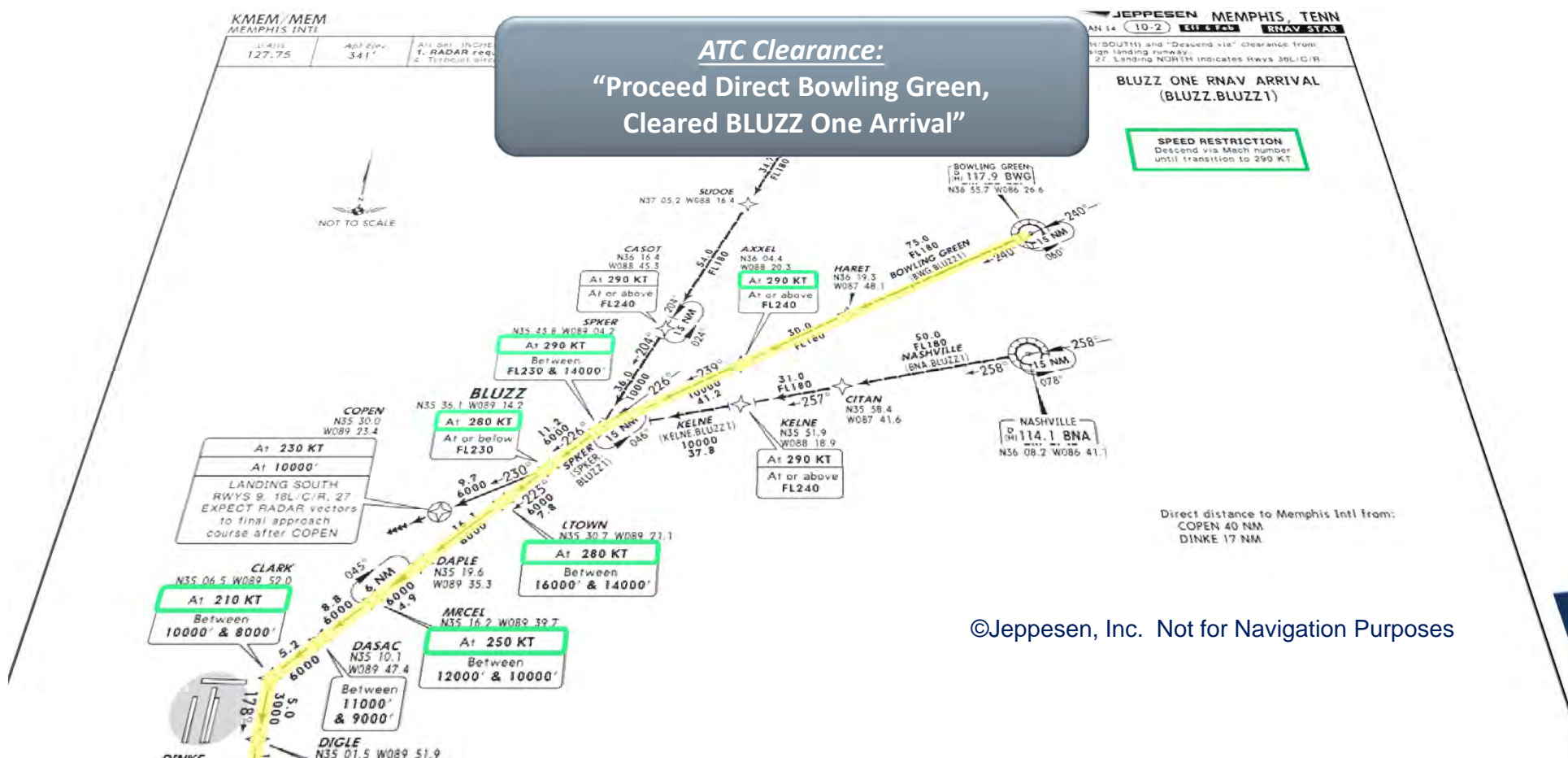
- Runway transition or landing direction may be provided by ARTCC
 - An advisory note may be included on the chart:

5. EXPECT "descend via" clearance and landing direction assignment (NORTH or SOUTH) by ARTCC. Charlotte approach will assign landing runway.

- Otherwise, landing runway must be assigned by Arrival Controller on initial contact or as soon as practical thereafter, and no later than 10 miles prior to the runway transition waypoint
- Landing runway in use broadcast by the ATIS may be used to determine anticipated STAR transition for planning purposes

ATC Clearance That Includes A STAR:

- Is a clearance to fly the depicted route & assigned transition
- Is a clearance requiring compliance with published speed restrictions
- **However, altitude assignment & vertical navigation is a separate clearance!**



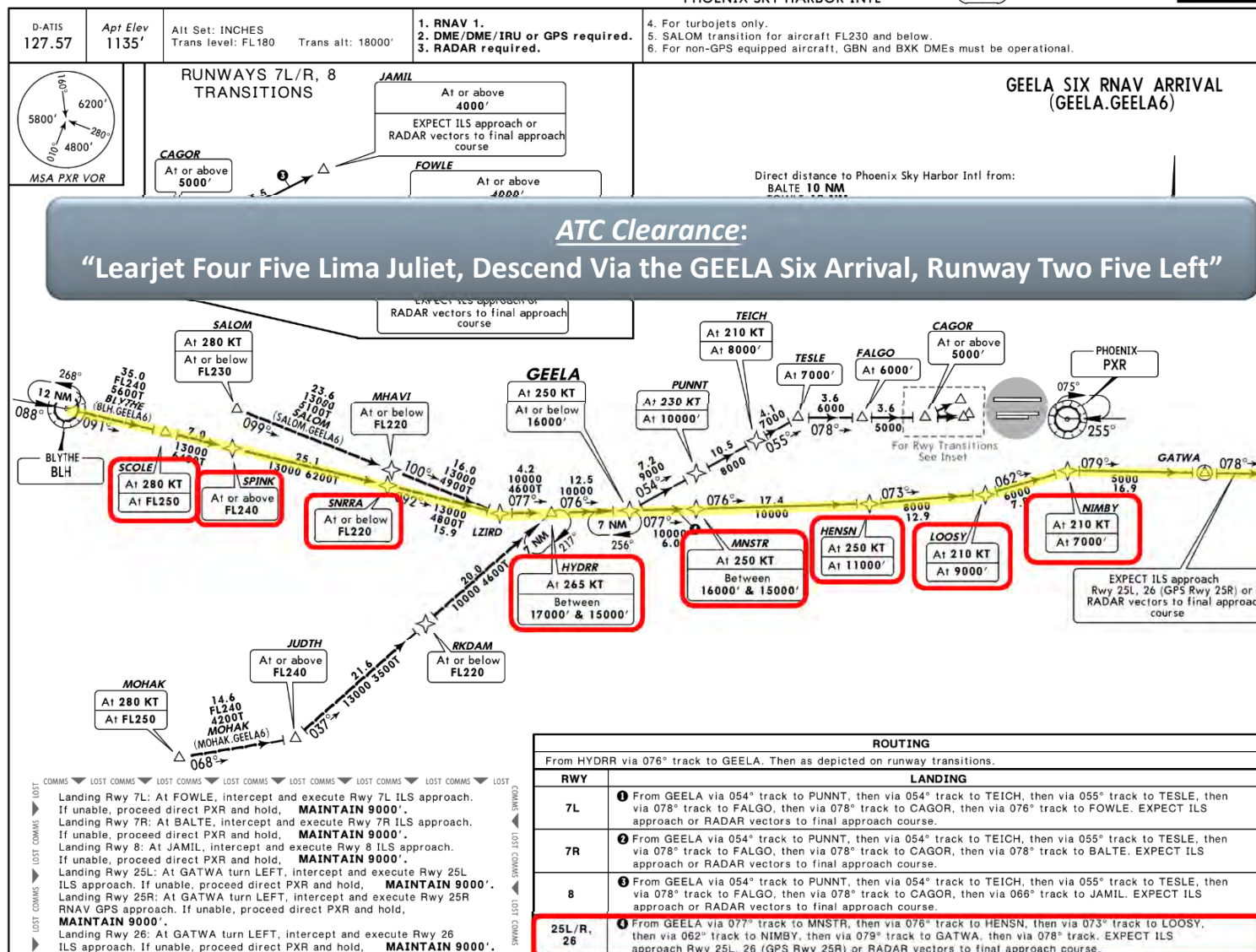
Descend Via – Operational Application



KPHX/PHX
PHOENIX SKY HARBOR INTL

JEPPESSEN
30 MAR 12 (10-2E) Eff 5 Apr

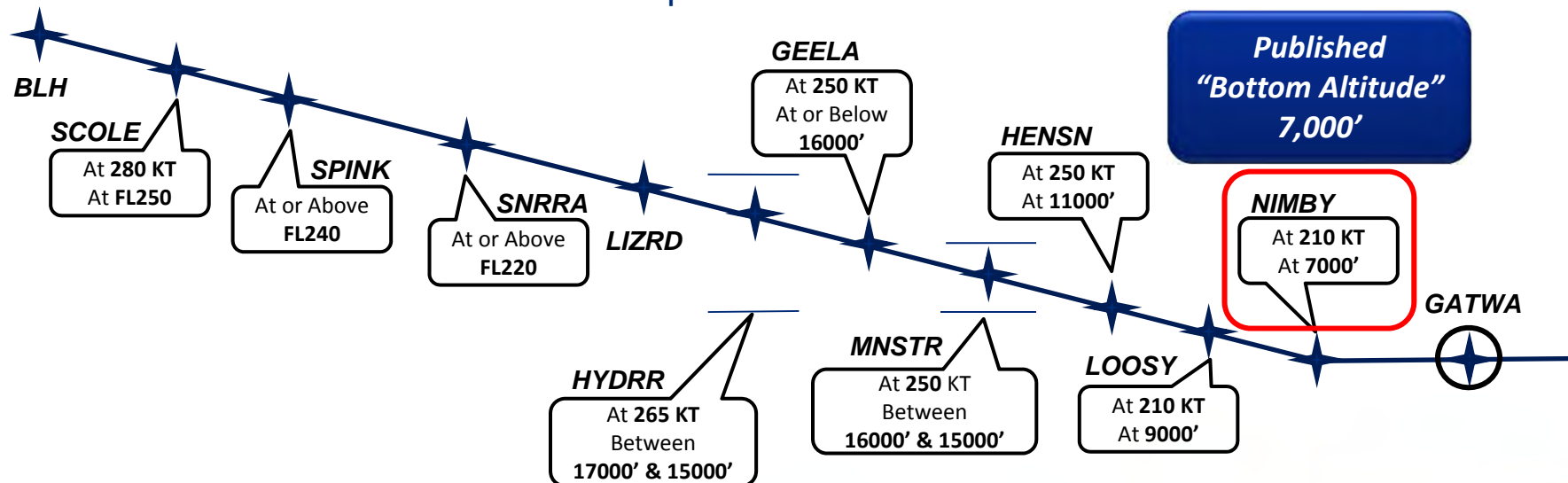
PHOENIX, ARIZ
RNAV STAR



“Descend Via” Clearance

The Pilot Should:

- Track the lateral path of the GEELA6
- Comply with published speed restrictions
- Descend at pilot’s discretion to comply with all published altitude restrictions
- Descend to the “Bottom Altitude” published on the STAR



Pilot/Controller Initial Contact Phraseology

**“Phoenix Approach, Learjet Four Five Lima Juliet,
Leaving Flight Level Two Eight Zero,
Descending Via The GEELA Six Arrival,
Runway Two Five Left, Information Alpha”**

**“Learjet Four Five Lima Juliet, Phoenix Approach,
Expect I-L-S Two Five Left Approach”**

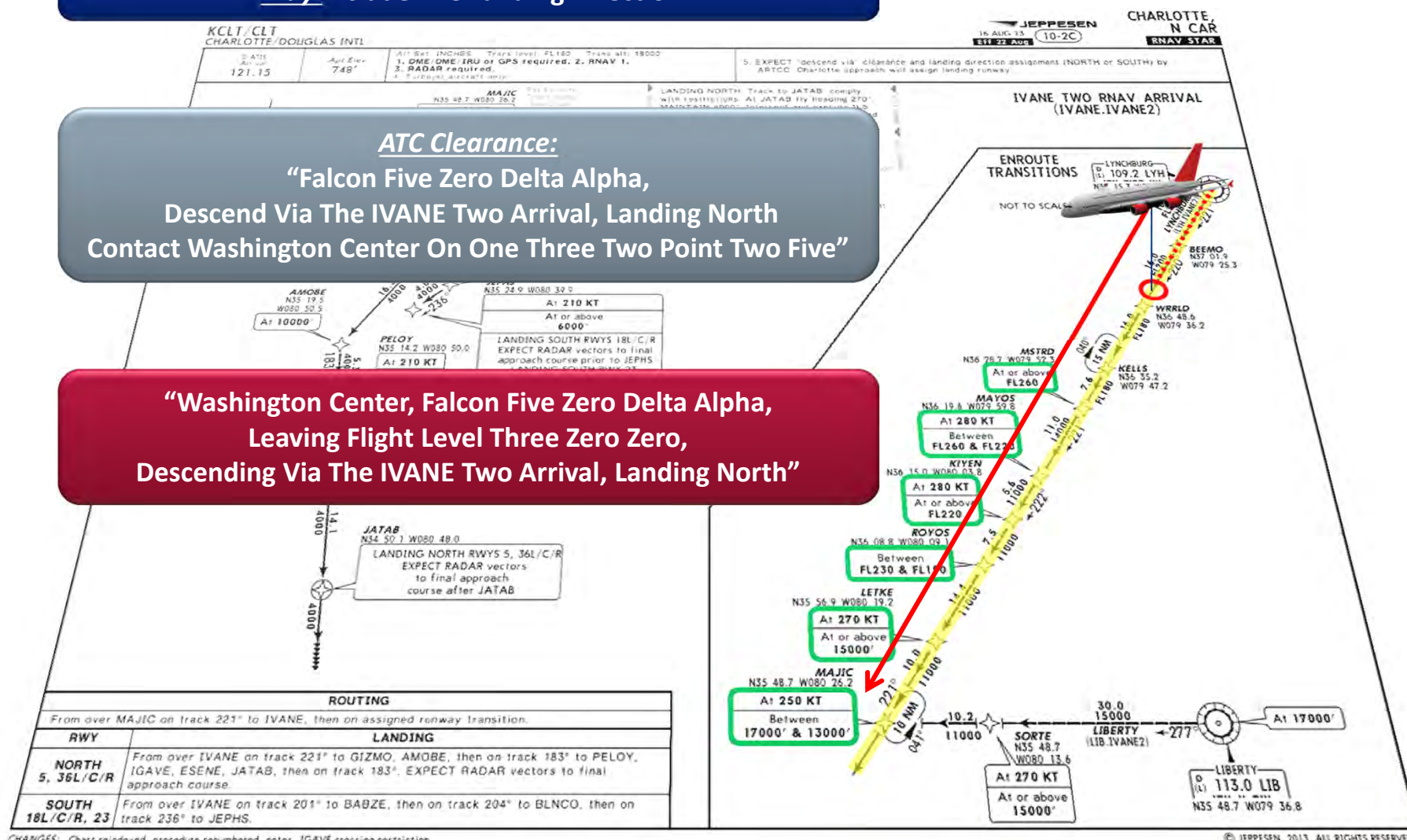


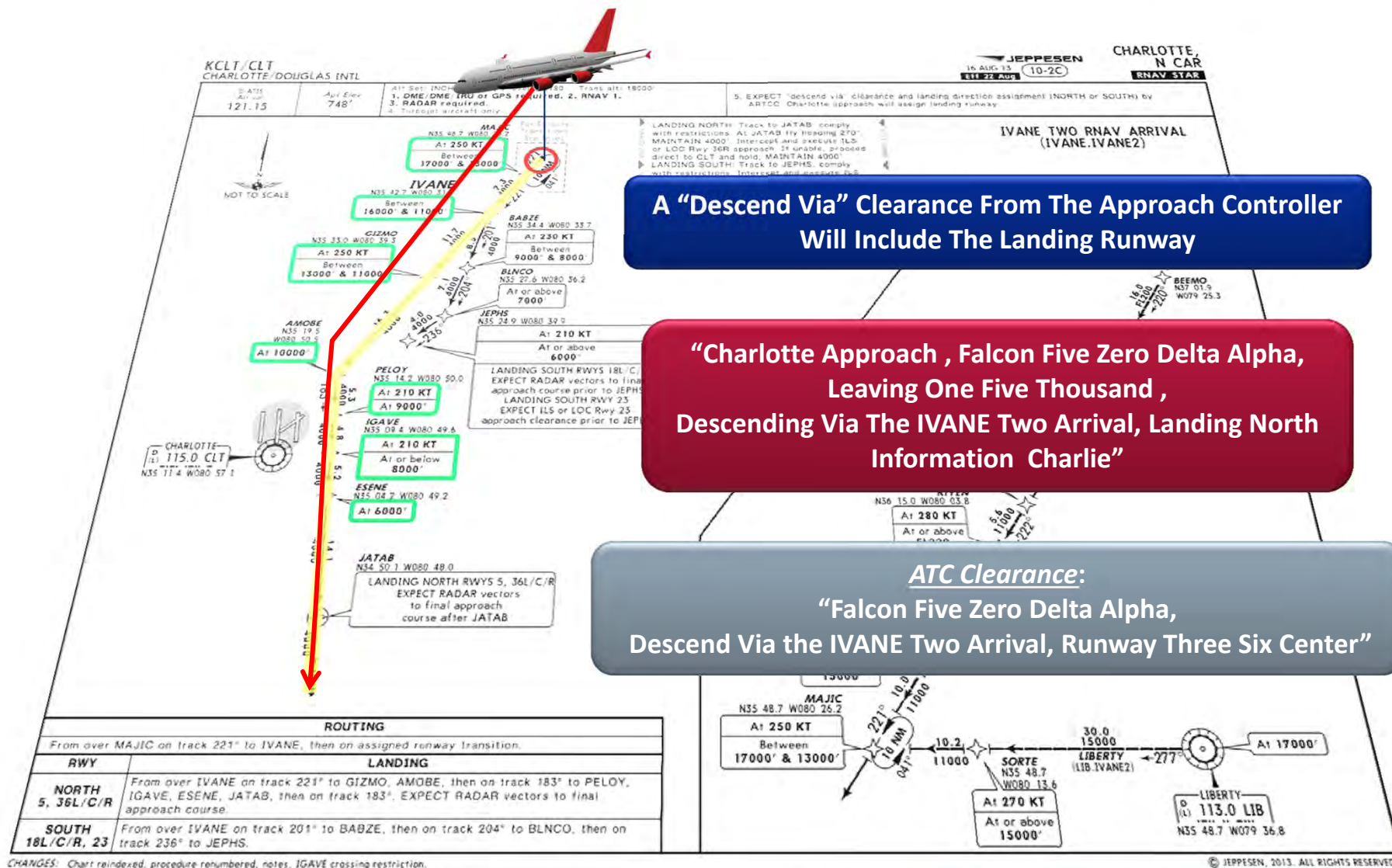
A “Descend Via” Clearance From The Center (ARTCC)
May Include The Landing Direction

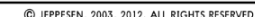
ATC Clearance:

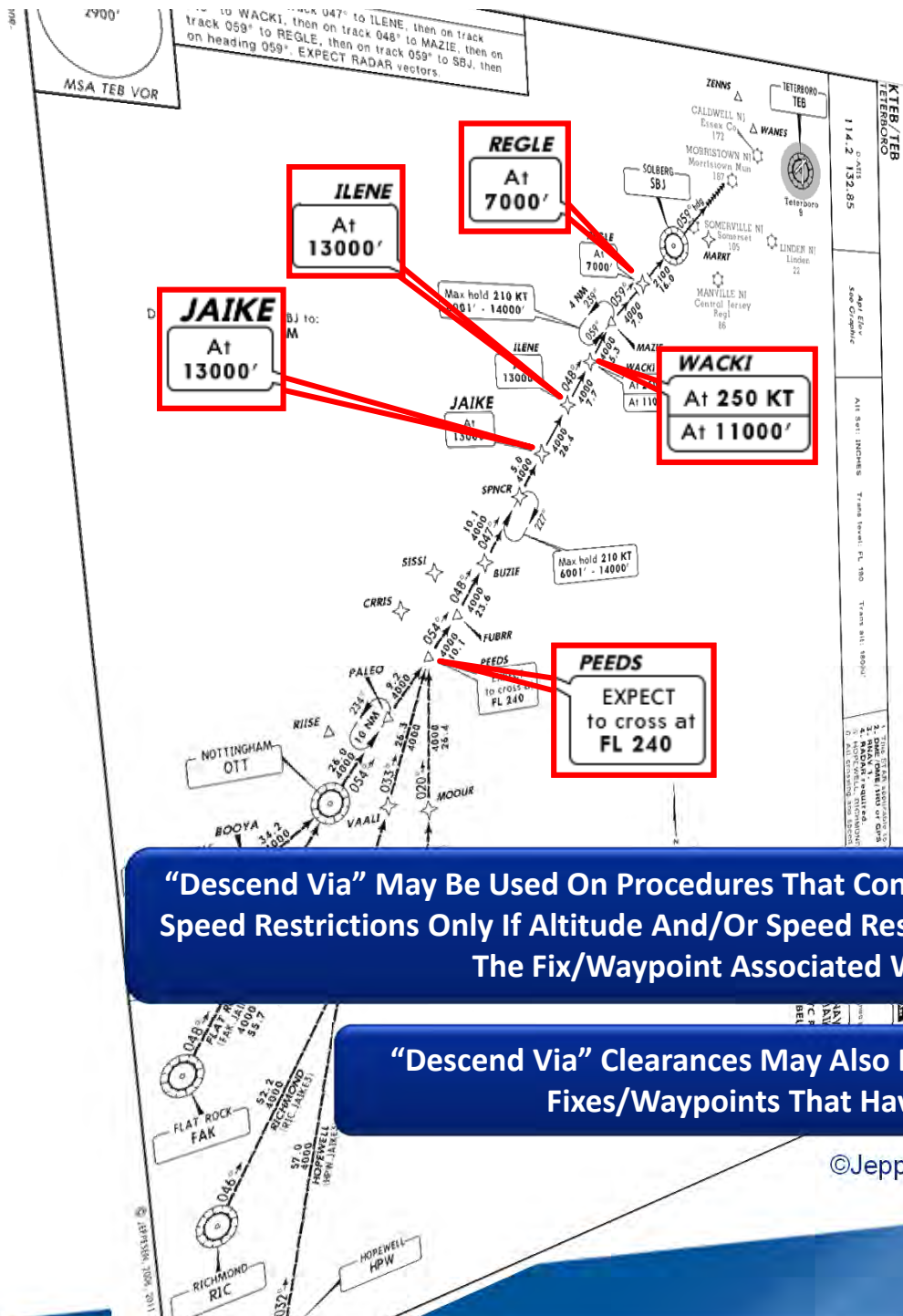
“Falcon Five Zero Delta Alpha,
Descend Via The IVANE Two Arrival, Landing North
Contact Washington Center On One Three Two Point Two Five”

“Washington Center, Falcon Five Zero Delta Alpha,
Leaving Flight Level Three Zero Zero,
Descending Via The IVANE Two Arrival, Landing North”









ATC Clearance:
 “Gulfstream Two Three Echo,
 Cross PEEDS At Flight Level Two Four Zero,
 Then Descend Via The JAIKE Three Arrival”

“Descend Via” May Be Used On Procedures That Contain Both “EXPECT” And REQUIRED Altitude And Speed Restrictions Only If Altitude And/Or Speed Restrictions Or Alternate Restrictions Are Issued For The Fix/Waypoint Associated With All Expect Restrictions

“Descend Via” Clearances May Also Be Issued If An Aircraft Is Past All Fixes/Waypoints That Have Expect Restrictions

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STARs

ATC Clearances

- Lateral/Routing Clearance:
 - *“Cleared TYLER One Arrival”*
 - No descent authorized
 - Comply with published speed restrictions
- Lateral Route & Unrestricted Descent:
 - *“Cleared TYLER One Arrival, Descend At Pilot’s Discretion, Maintain One Zero Thousand”*
 - Initiate descent at pilot’s discretion to 10,000’
 - All published altitude restrictions are canceled
 - All published speed restrictions remain in effect

KMEM/MEM
MEMPHIS INTL

0 ATIS 127.75
1. RADAR required. 2. DME/DME/IRU or GPS required. 3. RNAV 1.
4. Turboprop aircraft only.

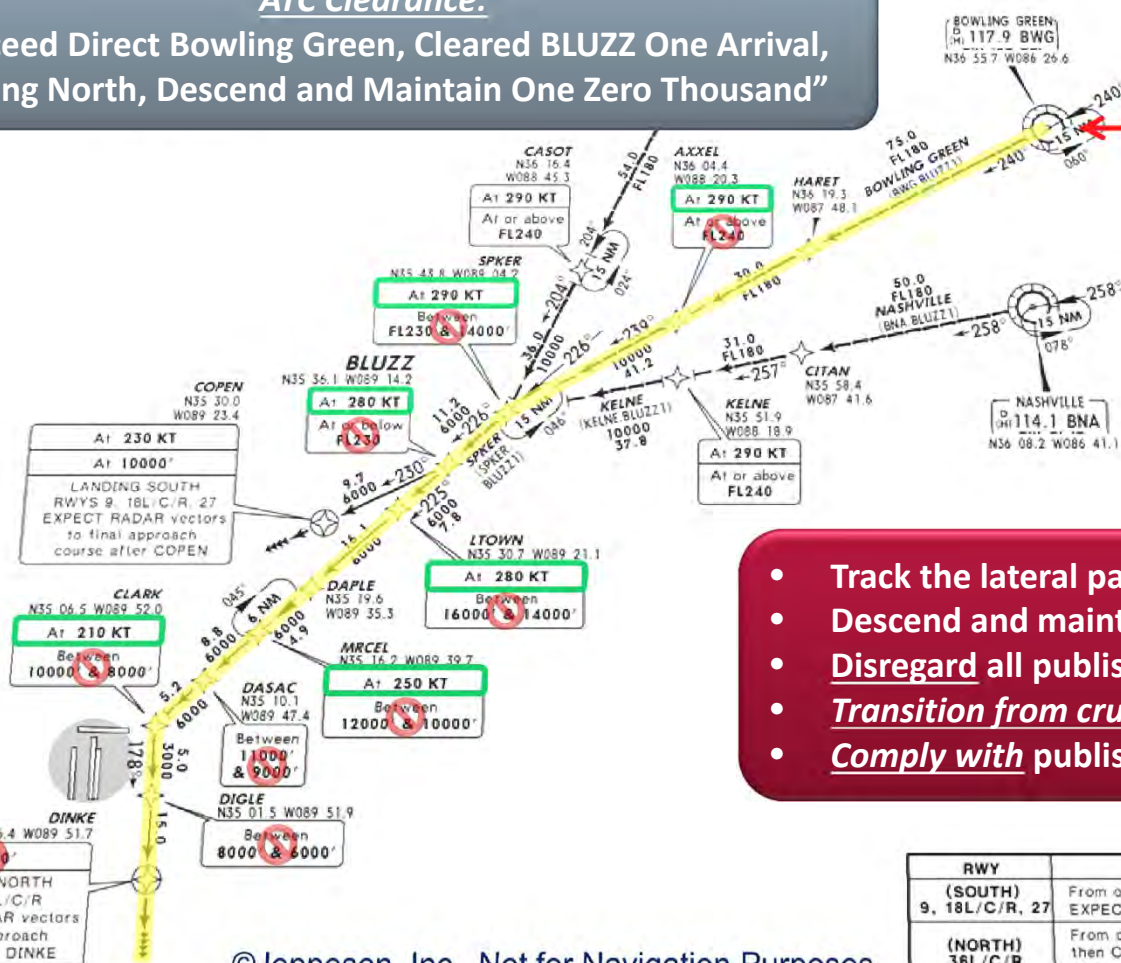
SPEED RESTRICTION
Descend via Mach number
until transition to 290 KT.

BLUZZ ONE RNAV ARRIVAL
(BLUZZ.BLUZZ1)

SPEED RESTRICTION
Descend via Mach number
until transition to 290 KT.

ATC Clearance:

"Proceed Direct Bowling Green, Cleared BLUZZ One Arrival,
Landing North, Descend and Maintain One Zero Thousand"



- Track the lateral path of the BLUZZ One STAR
- Descend and maintain 10,000'
- Disregard all published altitude restrictions
- Transition from cruise Mach to 290 KT
- Comply with published speed restrictions

RWY	ROUTING
(SOUTH) 9, 18L/C/R, 27	From over BLUZZ track 230° to COPEN, then track 230°. EXPECT RADAR vectors to final approach course.
(NORTH) 36L/C/R	From over BLUZZ track 225° to LTOWN, DAPLE, MRCEL, DASAC then CLARK, then track 178° to DIGLE and DINKE, then track 178°. EXPECT RADAR vectors to final approach course.

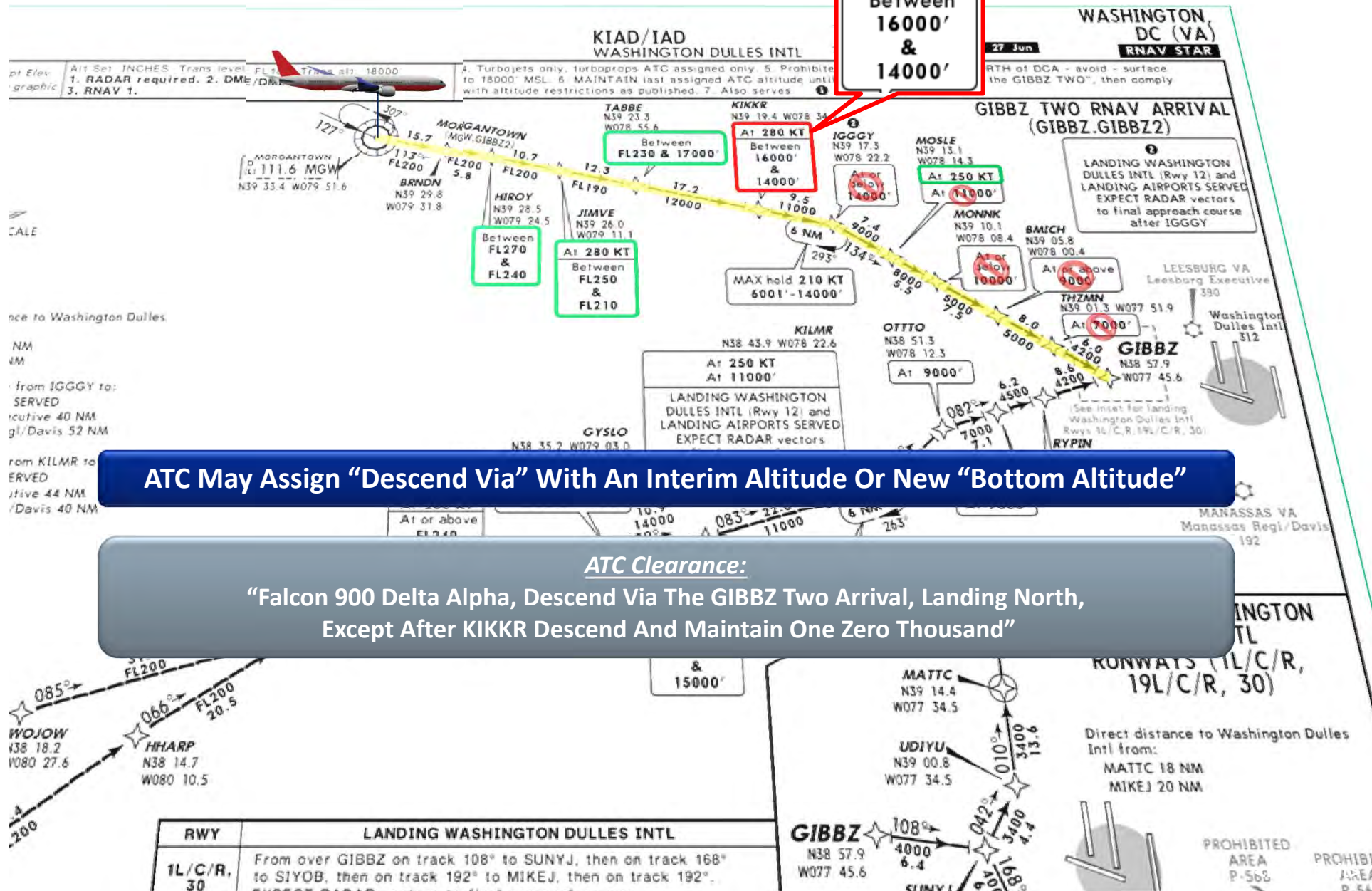
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CHANGES: New procedure at this airport.

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Descend Via – Operational Application

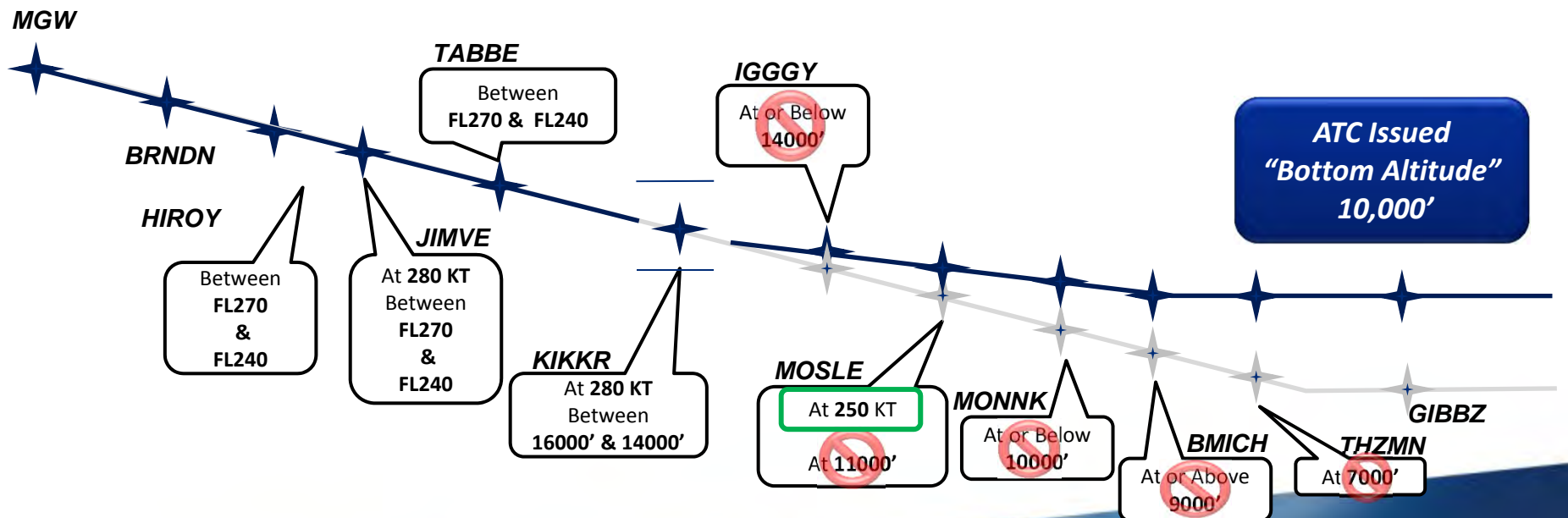
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“Descend Via” With An Interim Altitude Or Revised Bottom Altitude

The Pilot Should:

- Track the lateral path of the GIBBZ2, Runway 1 Center transition
- Descend at pilot's discretion to comply with published altitude restrictions until KIKKR
- Then descend unrestricted and at a optimum rate to 10,000'
- Comply with all published speed restrictions (e.g. 250 KT at MOSLE)



Pilot/Controller Initial Contact Phraseology

**“Potomac Approach,
Falcon Nine Zero Zero Delta Alpha,
Leaving Flight Level Two Four Zero
For One Zero Thousand,
Descending Via The GIBBZ Two Arrival,
Landing North, Information Bravo”**

**“Falcon Nine Zero Zero Delta Alpha,
Potomac Approach,
Expect R-NAV Zulu Runway One Center”**



ATC Intervention On A STAR

- ATC will issue an altitude to maintain and all appropriate altitude restrictions when the vector will take the aircraft off an assigned procedure that contains altitude instructions or the previously issued clearance included crossing restrictions
- ATC must advise the pilot what to expect when the vector is completed
- Phraseology:
 - *“Citation Two Charlie Alpha, Fly Heading Zero Nine Zero, Vector For Spacing, Descend And Maintain Flight Level Two Nine Zero, Expect To Resume The BRBBQ One Arrival”*
- Air traffic will assign an altitude to cross the waypoint/fix, if no altitude is depicted at the waypoint/fix, for aircraft on a direct routing to a STAR
- Air traffic must ensure obstacle clearance when issuing a “Descend Via” instruction to the pilot

Descend Via – Operational Application



ATC Clearance:

“Fly Heading One Two Zero, Vectors For Spacing,
Descend And Maintain Flight Level Two Nine Zero,
Expect To Resume The BRBBQ One Arrival”

SPEED RESTRICTION

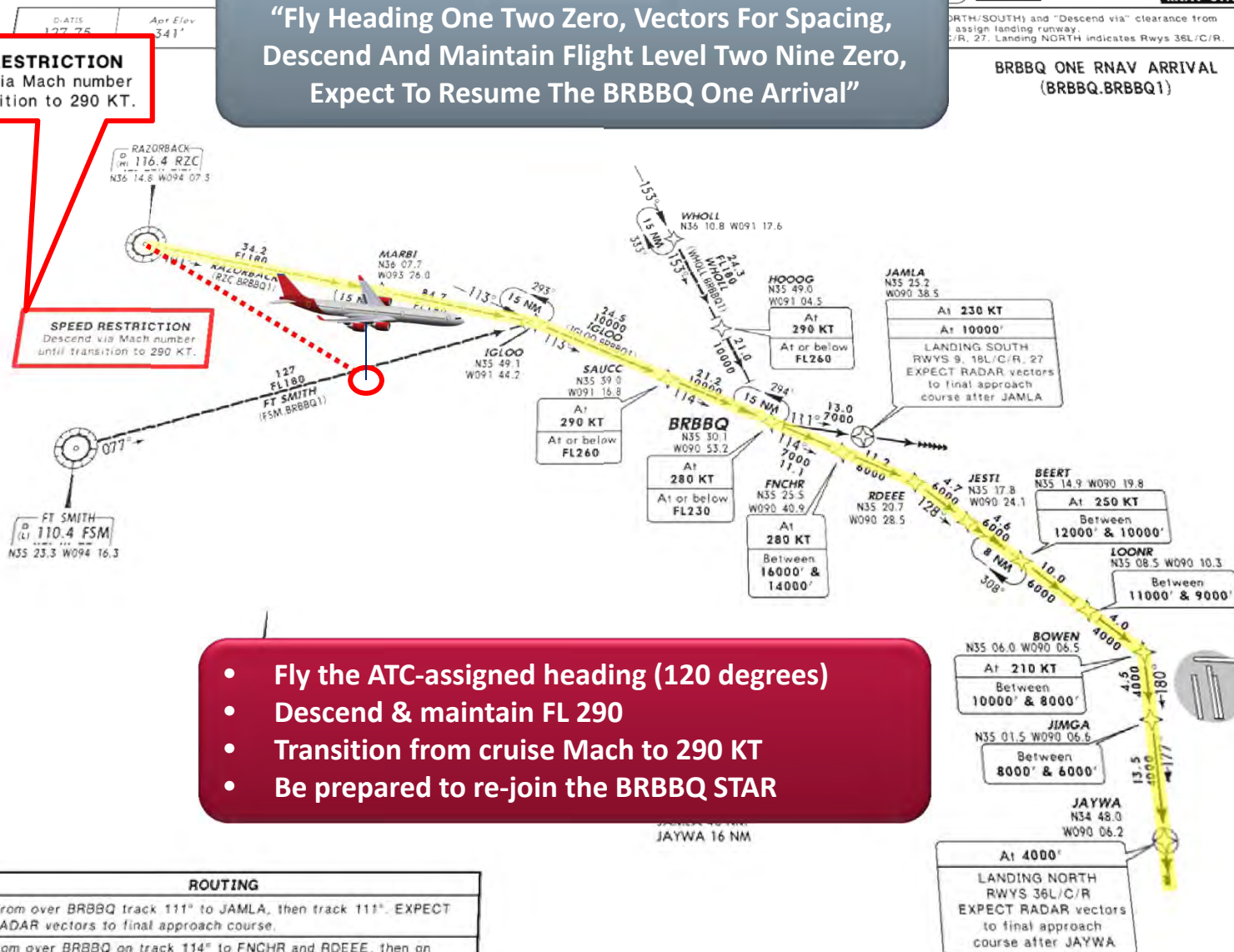
Descend via Mach number
until transition to 290 KT.

SPEED RESTRICTION
Descend via Mach number
until transition to 290 KT.

- Fly the ATC-assigned heading (120 degrees)
- Descend & maintain FL 290
- Transition from cruise Mach to 290 KT
- Be prepared to re-join the BRBBQ STAR

JEPPSEN
MEMPHIS, TENN
RNAV STAR

BRBBQ ONE RNAV ARRIVAL
(BRBBQ.BRBBQ1)



RWY	ROUTING
(SOUTH) 9, 18L/C/R, 27	From over BRBBQ track 111° to JAMLA, then track 111°. EXPECT RADAR vectors to final approach course.
(NORTH) 36L/C/R	From over BRBBQ on track 114° to FNCHR and RDEEE, then on track 128° to JESTI, BEERT, LOONR and BOWEN, then track 180° to JIMGA, track 177° to JAYWA, then track 177°. EXPECT RADAR vectors to final approach course.

CHANGES: New procedure at this airport.

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Descend Via – Operational Application



ATC Clearance:

“Proceed Direct BRBBQ,
Descend Via The BRBBQ One Arrival, Landing North”

SPEED RESTRICTION
Descend via Mach number
until transition to 290 KT.

SPEED RESTRICTION
Descend via Mach number
until transition to 290 KT.

BRBBQ
N35 30.1
W090 53.2

At
280 KT
At or below
FL230

- Proceed direct to BRBBQ
- Transition from cruise Mach to 290 KT
- Cross BRBBQ at or below FL 230 and at 280 KT
- Track the lateral path of the BRBBQ STAR
- Comply with published speed restrictions
- Comply with published altitude restrictions to the “Bottom Altitude” (4,000’)

RWY	ROUTING
(SOUTH) 9, 18L/C/R, 27	From over BRBBQ track 111° to JAMLA, then track 111°. EXPECT RADAR vectors to final approach course.
(NORTH) 36L/C/R	From over BRBBQ on track 114° to FNCHR and RDEEE, then on track 128° to JESTI, BEERT, LOONR and BOWEN, then track 180° to JIMGA, track 177° to JAYWA, then track 177°. EXPECT RADAR vectors to final approach course.

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Descend Via – Operational Application



ATC Clearance:

"Proceed Direct JESTI, Cross JESTI At One Zero Thousand, Then Descend Via The BRBBQ One Arrival, Landing North"

SPEED RESTRICTION
Descend via Mach number until transition to 290 KT.

ATC Must Assign An Altitude To Cross JESTI

SPEED RESTRICTION
Descend via Mach number until transition to 290 KT.

- Proceed direct to JESTI
- Transition from cruise Mach to 290 KT
- Cross JESTI at 10,000'
- Then track the lateral path of the BRBBQ STAR
- Comply with published speed restrictions
- Comply with published altitude restrictions to the "Bottom Altitude" (4,000')

RWY	ROUTING
(SOUTH) 9, 18L/C/R, 27	From over BRBBQ track 111° to JAMLA, then track 111°. EXPECT RADAR vectors to final approach course.
(NORTH) 36L/C/R	From over BRBBQ on track 114° to FNCHR and RDEEE, then on track 128° to JESTI, BEERT, LOONR and BOWEN, then track 180° to JIMGA, track 177° to JAYWA, then track 177°. EXPECT RADAR vectors to final approach course.

CHANGES: New procedure at this airport.

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Descend Via – Operational Application



ATC Clearance:

“Proceed Direct BEERT,
Descend Via The BRBBQ One Arrival, Landing North”

SPEED RESTRICTION
Descend via Mach number
until transition to 290 KT.

SPEED RESTRICTION
Descend via Mach number
until transition to 290 KT.

BEERT
N35 14.9 W090 19.8

At 250 KT

Between
12000' & 10000'

- Proceed direct to BEERT
- Transition from cruise Mach to 290 KT
- Cross BEERT between 12,000' & 10,000'
- Cross BEERT at 250 KT
 - Reduce speed the minimum distance required prior to BEERT commensurate with normal aircraft performance
- Track the lateral path of the BRBBQ STAR
- Comply with published speed restrictions
- Comply with published altitude restrictions to the “Bottom Altitude” (4,000')

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Speed Restrictions Published On A STAR

- When otherwise cleared along a route or procedure that contains published speed restrictions, the pilot must comply with those speed restrictions **independent of a “Descend Via” or “Descend & Maintain” clearance**
- ATC anticipates pilots will begin adjusting speed the minimum distance necessary prior to a published speed restriction, commensurate with normal aircraft deceleration, to cross the waypoint/fix at the published speed
- Once at the published speed, ATC expects pilots will maintain the published speed until additional adjustment is required to comply with further published or ATC assigned speed restrictions or as required to ensure compliance with 14 CFR Section 91.117
- If vectored off a STAR route segment where a published speed restriction applies, pilots **are expected to maintain** the published speed restriction until further advised
- Absent any qualifying instructions, issuance of a “Descend Via” clearance cancels a previously issued ATC speed adjustment and provides pilot discretion to adjust speed while requiring compliance with upcoming restrictions
- ATC may require compliance with previously issued speed adjustments using phraseology:
 - “Proceed to (WP name), then descend via...”,
 - “Maintain (speed) until (WP name), then descend via...”
 - “Cross (WP name) at (speed) then descend via....”
- Where there are no upcoming speed restrictions, issuance of a “Proceed direct (WP name), descend via” cancels a previously issued speed adjustment and authorizes speed at pilot's discretion as appropriate for the phase of flight, ensuring compliance with 14 CFR 91.117

DESCEND VIA ARRIVAL PHRASEOLOGY					
PHASE OF FLIGHT	SCENARIO	CONTROLLER		PILOT	
		ACTION	PHRASEOLOGY	ACTION	PHRASEOLOGY
ENROUTE	STAR was filed IFR flight plan & aircraft was cleared "as filed."	<ul style="list-style-type: none"> None required. 	NA	<ul style="list-style-type: none"> Track the lateral path of the STAR. <u>Comply with published speed restrictions.</u> Maintain last assigned altitude. 	NA
	Assign a STAR to an IFR aircraft.	<ul style="list-style-type: none"> Clear aircraft to a fix on STAR, if required. Assign the STAR. 	"American Two, Proceed Direct Charleston VORTAC, Cleared TYLER Two Arrival."	<ul style="list-style-type: none"> Track the lateral path of the STAR. Comply with published speed restrictions. <u>Maintain last assigned altitude.</u> 	"American Two, Proceed Direct Charleston VORTAC, Cleared TYLER Two Arrival."
DESCENT	ALTITUDE	Initiate a descent to an aircraft on a STAR. Issue descent at pilot's discretion, if required.	<ul style="list-style-type: none"> Issue the altitude to maintain. Issue the altitude to maintain with descent at pilot's discretion. 	<p>American Two Descend Now To Right Level Three One Zero, Then Descend at Pilot's Discretion Maintain Right Level Two Four Zero."</p>	<ul style="list-style-type: none"> Track the lateral path of the STAR. Comply with published speed restrictions. Begin descend now to FL 310. Then, descend at pilot's discretion to FL 240. <p>"American Two, Descend Now To Right Level Three One Zero, Then Descend at Pilot's Discretion Maintain Right Level Two Four Zero."</p>
		[ENROUTE CONTROLLER] Instruct an aircraft to descend and comply with all restrictions published on a STAR.	<ul style="list-style-type: none"> Instruct aircraft to descend via the STAR. Advise of landing <u>direction</u>, if applicable. 	"American Two, Descend Via The TYLER Two Arrival, Landing North"	<ul style="list-style-type: none"> Track the lateral path of the STAR. Comply with published speed restrictions. Descend at pilot's discretion from the last assigned altitude to comply with all published altitude restrictions. <p>"American Two, Descend Via, The TYLER Two Arrival, Landing North"</p>
		[TERMINAL CONTROLLER] Instruct an aircraft to descend and comply with all restrictions published on a STAR.	<ul style="list-style-type: none"> Instruct aircraft to descend via the STAR. Advise of landing <u>way</u>, if applicable. 	"American Two, Descend Via The TYLER Two Arrival, Runway One Center"	<ul style="list-style-type: none"> Track the lateral path of the STAR. Comply with published speed restrictions. Descend at pilot's discretion from the last assigned altitude to comply with all published altitude restrictions. <p>"American Two, Descend Via, The TYLER Two Arrival, Runway One Center"</p>
		Assign a waypoint altitude restriction, and then instruct an aircraft to descend and comply with all restrictions published on a STAR.	<ul style="list-style-type: none"> Issue the altitude crossing clearance. Then, instruct aircraft to descend via the STAR. 	"American Two, Cross GARYM At Right Level Two Four Zero, Then Descend Via The TYLER Two Arrival."	<ul style="list-style-type: none"> Track the lateral path of the STAR. Comply with published speed restrictions. Descend at pilot's discretion to cross GARYM at FL 240. Then, descend at pilot's discretion to comply with all published altitude restrictions. <p>"American Two, Cross GARYM At Right Level Two Four Zero, Then Descend Via The TYLER Two Arrival"</p>
		Instruct an aircraft to descend and comply with all restrictions published on a STAR, <u>but</u> assign "Bottom Altitude" <u>that differs</u> from that published on the STAR.	<ul style="list-style-type: none"> Instruct aircraft to descend via the STAR. Specify the fix after which the new "Bottom Altitude" will apply. There should be no published altitude restrictions between this fix and the new "Bottom Altitude". Assign the new "Bottom Altitude". 	<p>"American Two Descend Via The TYLER Two Arrival Except After ARGH! Maintain Seven Thousand."</p>	<ul style="list-style-type: none"> Track the lateral path of the STAR. Comply with published speed restrictions. Comply with published altitude restrictions until ARGH!, then descend & maintain the ATC-assigned "Bottom Altitude". <p>"American Two, Descend Via The TYLER Two Arrival Except After ARGH! Maintain Seven Thousand."</p>
		Instruct an aircraft to descend and comply with all restrictions published on a STAR, <u>but</u> assign an altitude restriction at a waypoint <u>that differs</u> from that published at that waypoint on the STAR.	<ul style="list-style-type: none"> Instruct aircraft to descend via the STAR. Amend the waypoint's altitude restriction. 	<p>"American Two, Descend Via The TYLER Two Arrival, Except Cross ARGH! At One Zero Thousand."</p>	<ul style="list-style-type: none"> Track the lateral path of the STAR. Comply with published speed restrictions. Comply with published altitude restrictions except cross ARGH at the ATC-assigned altitude. <p>"American Two, Descend Via The TYLER Two Arrival, Except Cross ARGH! At One Zero Thousand"</p>

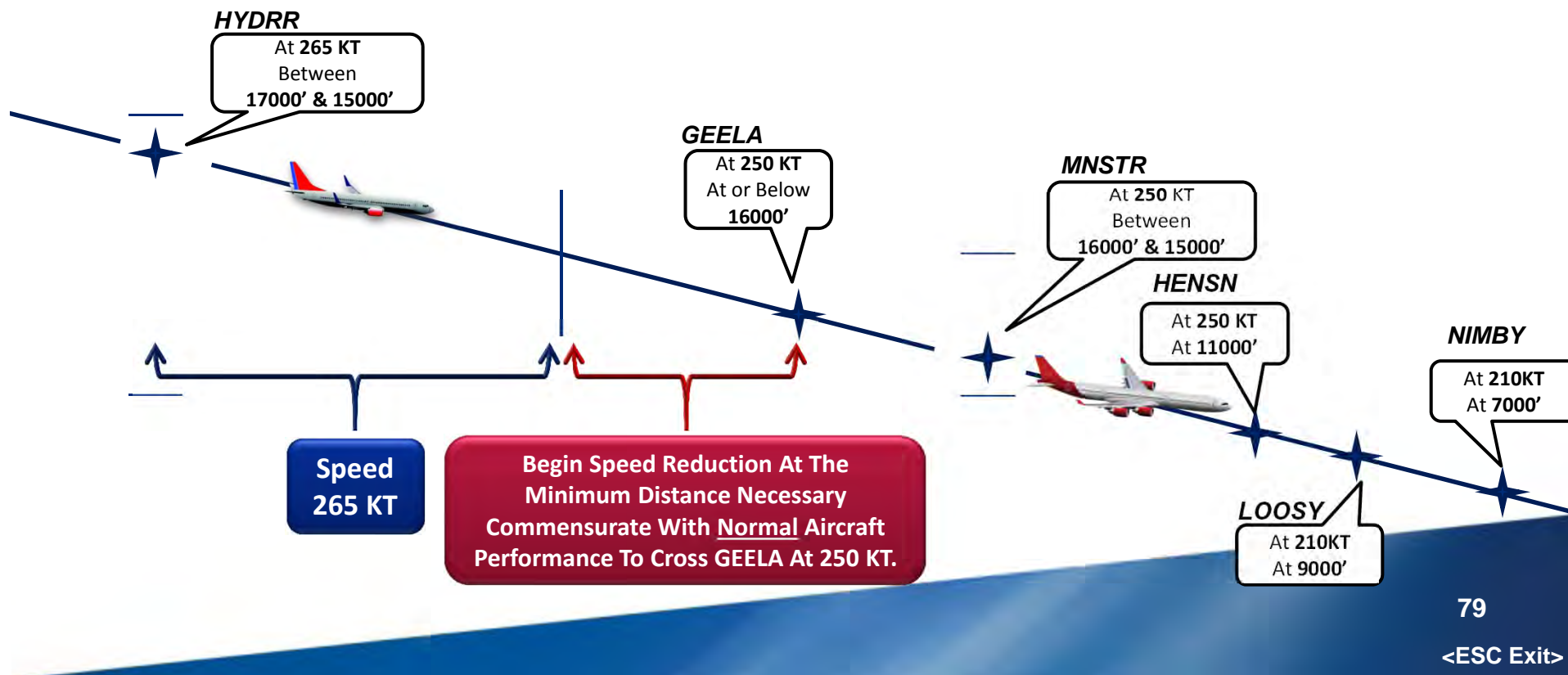
DESCEND VIA ARRIVAL PHRASEOLOGY						
PHASE OF FLIGHT		SCENARIO	CONTROLLER		PILOT	
			ACTION	PHRASEOLOGY	ACTION	PHRASEOLOGY
DESCENT	SPEED	Instruct an aircraft to descend and comply with <u>altitude</u> restrictions published on a STAR, but issue a speed to maintain during the descent.	<ul style="list-style-type: none">Instruct aircraft to descend via the STAR.Issue a speed to be maintained in the descent.	<i>"American Two, Descend Via The TYLER Two Arrival, Landing North, Except/Maintain Three Zero Zero Knots."</i>	<ul style="list-style-type: none">Track the lateral path of the STAR.Descend at pilot's discretion from the last assigned altitude to comply with all published altitude restrictions.<u>Delete speed restrictions</u> published on the STAR.Maintain speed 300 KIAS until required to slow to 250 KIAS below 10,000' (ref 14 CFR 91.117).	<i>"American Two, Descend Via The TYLER Two Arrival Landing North, Except/Maintain Three Zero Zero Knots."</i>
		Issue an altitude to cross a waypoint, then instruct aircraft to descend and comply with the altitude restrictions published on the STAR, but <u>assign</u> a speed to maintain instead of complying with the published speed restrictions on the STAR.	<ul style="list-style-type: none">Assign the waypoint's altitude restriction.<u>Then</u>, instruct aircraft to descend via the STAR.Issue the speed to be maintained.	<i>"American Two, Cross LMOND At Or Above One Seven Thousand, Then Descend Via TYLER Two Arrival, Except/Maintain Three Zero Zero Knots"</i>	<ul style="list-style-type: none">Track the lateral path of the STAR.Cross LMOND at 17,000'.Then descend at pilot's discretion to comply with all published altitude restrictions.<u>Delete speed restrictions</u> published on the STAR.Maintain speed 300 KIAS until required to slow to 250 KIAS below 10,000' (ref 14 CFR 91.117).	<i>"American Two, Cross LMOND At Or Above One Seven Thousand, Then Descend Via TYLER Two Arrival, Except/Maintain Three Zero Zero Knots"</i>
	ROUTE	ATC must vector an aircraft away from the lateral path of a STAR with altitude restrictions.	<ul style="list-style-type: none">Assign a heading to maintain.State the purpose of the vector.Assign an altitude to maintain.Advise pilot to expect to resume STAR.	<i>"American Two, Fly Heading Zero Niner Zero, Vectors For Spacing, Descend And/Maintain Niner Thousand, Expect to resume the TYLER Two Arrival"</i>	<ul style="list-style-type: none">Fly heading 090.Descend and maintain 9,000'Be prepared to resume the TYLER Two STAR. Do not sequence FMS beyond the STAR.	<i>"American Two, Fly Heading Zero Niner Zero, Descend And/Maintain Niner Thousand."</i>
		Clear an aircraft to re-join the STAR at a waypoint <u>with</u> a published altitude restriction, then instruct the aircraft to descend and comply with all published restrictions on the STAR.	<ul style="list-style-type: none">Clear the aircraft to the waypoint with a published altitude restriction.Instruct aircraft to descend via the STAR.Ensure obstacle clearance until the aircraft is established on the lateral and vertical path of the STAR.	<i>"American Two, Proceed Direct GARYY, Descend Via TYLER Two Arrival"</i>	<ul style="list-style-type: none">Proceed direct to GARYY & resume the STAR.Comply with any speed restriction, if published, at GARYY.Descend at pilot's discretion to comply with the altitude restriction published at GARYY.Descend & comply with all restrictions published on the remainder of the STAR.	<i>"American Two, Proceed Direct GARYY, Descend Via TYLER Two Arrival"</i>
		Clear an aircraft to re-join the STAR at a waypoint <u>that does not have</u> a published altitude restriction, then instruct the aircraft to descend and comply with all published restrictions on the STAR.	<ul style="list-style-type: none">Clear the aircraft to the waypoint.Assign an altitude to cross the waypoint.Then, instruct aircraft to descend via the STAR.Ensure obstacle clearance until the aircraft is established on the lateral and vertical path of the STAR.	<i>"American Two, Proceed Direct BTOWN, Cross BTOWN At Or Above One Zero Thousand, Then Descend Via TYLER Two Arrival"</i>	<ul style="list-style-type: none">Proceed direct to BTOWN & resume the STAR.Comply with any speed restriction, if published, at BTOWN.Descend at pilot's discretion to cross BTOWN at or above 10,000'.Then, descend & comply with all restrictions published on the remainder of the STAR.	<i>"American Two, Proceed Direct BTOWN, Cross BTOWN At Or Above One Zero Thousand, Then Descend Via TYLER Two Arrival"</i>
	GENERAL	Aircraft has been issued a descend via clearance with no change to the STAR's "Bottom Altitude".	NA	NA	NA	<i>"American Two, Flight Level One Eight Zero, Descending Via The TYLER Two Arrival, Landing North."</i>
		Aircraft is making the initial contact following a frequency change.	NA	NA	NA	<i>"American Two, Flight Level One Eight Zero For Seven Thousand, Descending Via The TYLER Two Arrival, Landing North."</i>

Unless Otherwise Assigned By ATC, Pilots Must Comply With Published Speed Restrictions ***Independent Of Any Climb Or Descent Clearance***



SID & STAR Published Speed Restrictions

- Strict compliance with published speed restrictions is necessary to maintain lateral & longitudinal spacing and to prevent “compression” of the sequential aircraft flow
- Where a speed reduction is required, ATC anticipates pilots will begin adjusting speed the minimum distance necessary, commensurate with normal aircraft performance, prior to a published speed restriction so as to cross the waypoint/fix at the published speed
- Once at the published speed, ATC expects pilots will maintain the published speed until additional adjustment is required to comply with further published or ATC assigned speed restrictions or as required to ensure compliance with 14 CFR Section 91.117



Speed Adjustments

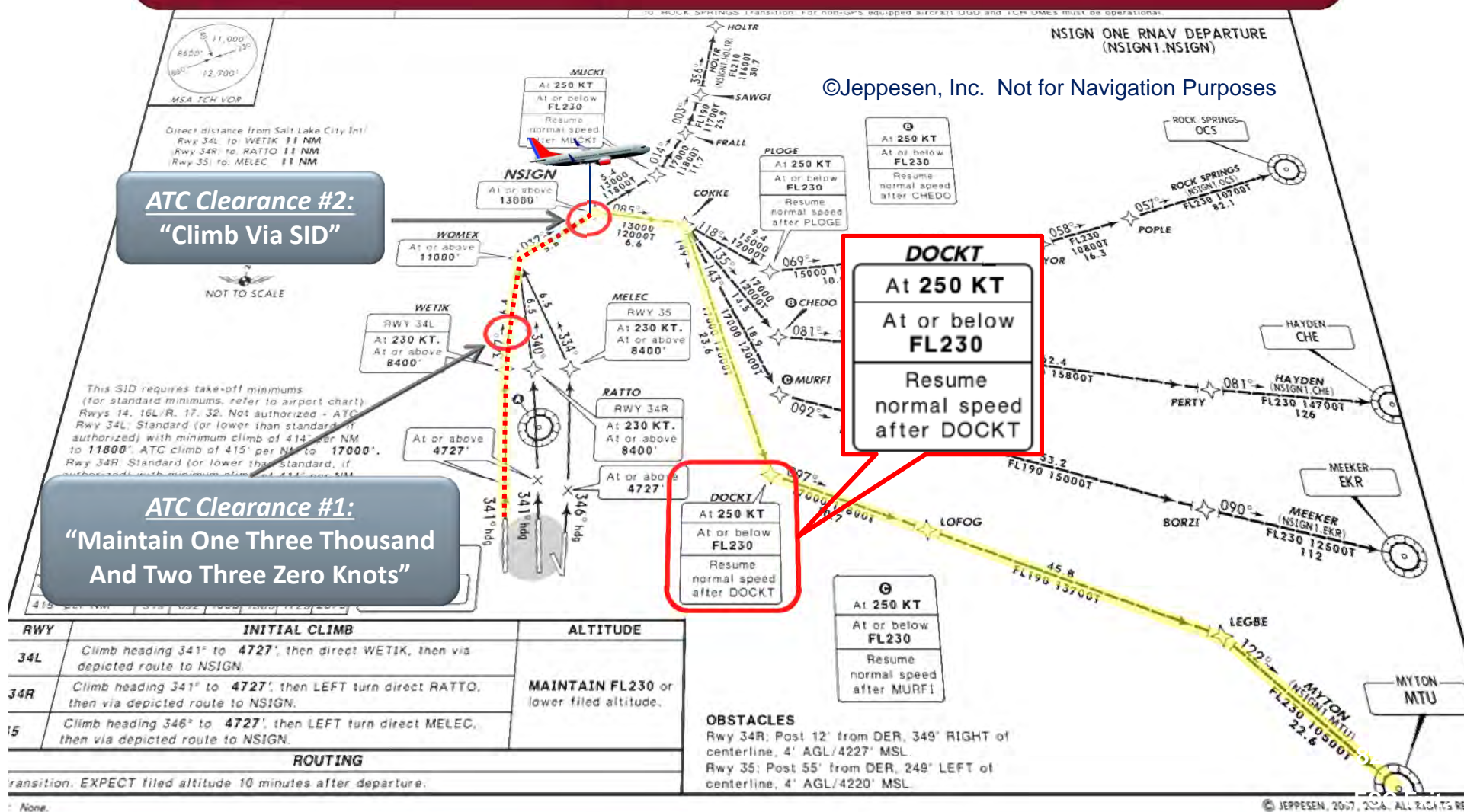
- However, ATC may issue speed adjustments to address tactical requirements necessary for the separation & spacing of aircraft
- ATC uses the phraseology “*Maintain (speed) knots*” to assign a speed to be maintained:
 - “*Learjet Four Five Lima Juliet, Maintain Two Five Zero Knots*”
- It is recommended that pilots provide the ATC-assigned speed on subsequent frequency changes
 - (ref: AIM 4-4-12. Speed Adjustments)
- ATC-assigned speeds remain in effect until canceled by ATC
- When issuing speed adjustments to aircraft cleared on procedures with published speed restrictions, ATC will specify the point at which the issued restriction **begins, ends, or changes** the published restrictions using the methods described on the following slides to cancel or amend speed assignments

Phraseology

“Climb Via” & “Descend Via”

- Absent any qualifying instructions, issuance of a climb or descend via clearance **cancels** a previously issued ATC speed adjustment and provides pilot discretion to adjust speed while requiring compliance with upcoming restrictions'
- ATC **may require** compliance with previously issued speed adjustments using phraseology such as
 - *“Proceed to (WP name), then climb/descend via...”*
 - *“Maintain (speed) until (WP name), then climb/descend via...”*
 - *“Cross (WP name) at (speed) then climb/descend via....”*
- Where there are no upcoming speed restrictions, issuance of a *“Proceed direct (WP name), climb/descend via”* cancels a previously issued speed adjustment and authorizes speed at pilot's discretion as appropriate for the phase of flight, ensuring compliance with 14 CFR 91.117

- Resume climb & comply with published altitude restrictions to the “Top Altitude” (FL 230)
- The last ATC-assigned speed (230 KT) is canceled
- Pilot may adjust speed at their discretion in compliance with 14 CFR 91.117, not to exceed the 250 KT speed restriction at DOCKT



Speed Adjustments



ATC Clearance #2:
 "Proceed Direct SHOBO,
 Climb Via The EEONS Three Departure"

SHOBO
 N39 58.3
 W104 09.2
 At or below
 12000'

LUPTN
 N39 59.8
 W103 55.4
 At or above
 14000'

KDEN/DEN
 DENVER INTL

128.2

Trans level: FL180 Trans alt: 18000
 1. DME/DME/IRU or GPS required. 2. RNAV 1, 3. Turboprops only.
 4. Takeoff Rwy 8: 16L R, 17L R, 34L R, 35L R. RADAR required for
 non-GPS equipped aircraft. 5. Rwy 25: RADAR required.

5. Accrue 10000' if slower speed is required to meet crossing
 delivery prior to 10000'.

SEN DENVER, COLO

16 AUG 13 (10-3J) Eff 22 Aug RNAV SID

EEONS THREE RNAV DEPARTURE
 (EEONS3.WYNDM)

MAX 210 KT
 Climb to
 5934'

263°
 hdg

Climb to
 5934'

ATC Clearance #1:

"Fly Heading Three Five Zero, Vectors for Spacing,
 Do Not Exceed Two Five Zero Knots"

- Proceed direct to SHOBO & resume EEONS SID
- The last ATC-assigned speed (250 KT) is canceled
- Pilot may adjust speed at their discretion in compliance with 14 CFR 91.117
- Continue climb & comply with published altitude restrictions to the "Top Altitude" (FL 230)

ROUTING

Then on depicted route to WYNDM. MAINTAIN FL230 or filed lower altitude.
 EXPECT higher filed altitude 10 minutes after departure.

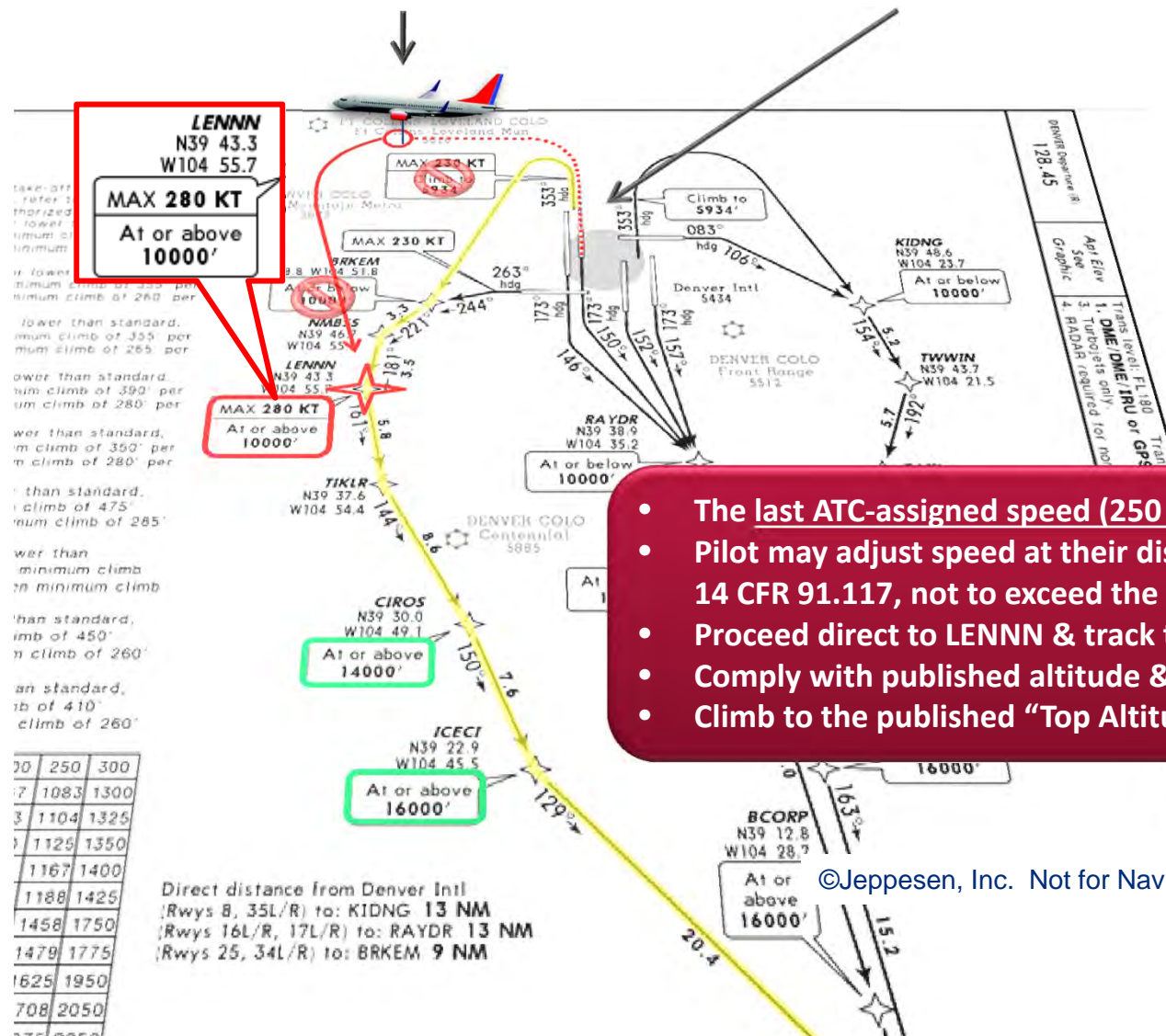
Gnd speed-KT	75	100	150	200	250	300
230° per NM	268	383	575	767	958	1150
320° per NM	400	533	800	1067	1333	1600
400° per NM	500	667	1000	1333	1667	2000
420° per NM	525	700	1050	1400	1750	2100
450° per NM	563	750	1125	1500	1875	2250
465° per NM	581	775	1163	1550	1938	2325
500° per NM	625	833	1250	1667	2083	2500

ROUTING

Then on depicted route to WYNDM. MAINTAIN FL230 or filed lower altitude.
 EXPECT higher filed altitude 10 minutes after departure.

ATC Clearance #2:
 “Proceed Direct LENNN,
 Climb Via The STAKR Two Departure”

ATC Clearance #1:
 “Fly Heading Two Seven Zero, Vectors for Spacing,
 Maintain Two Five Zero Knots”



- The last ATC-assigned speed (250 KT) is canceled
- Pilot may adjust speed at their discretion in compliance with 14 CFR 91.117, not to exceed the 280 KT speed restriction at LENNN
- Proceed direct to LENNN & track the lateral path of the STAKR SID
- Comply with published altitude & speed restrictions
- Climb to the published “Top Altitude” (FL 230)

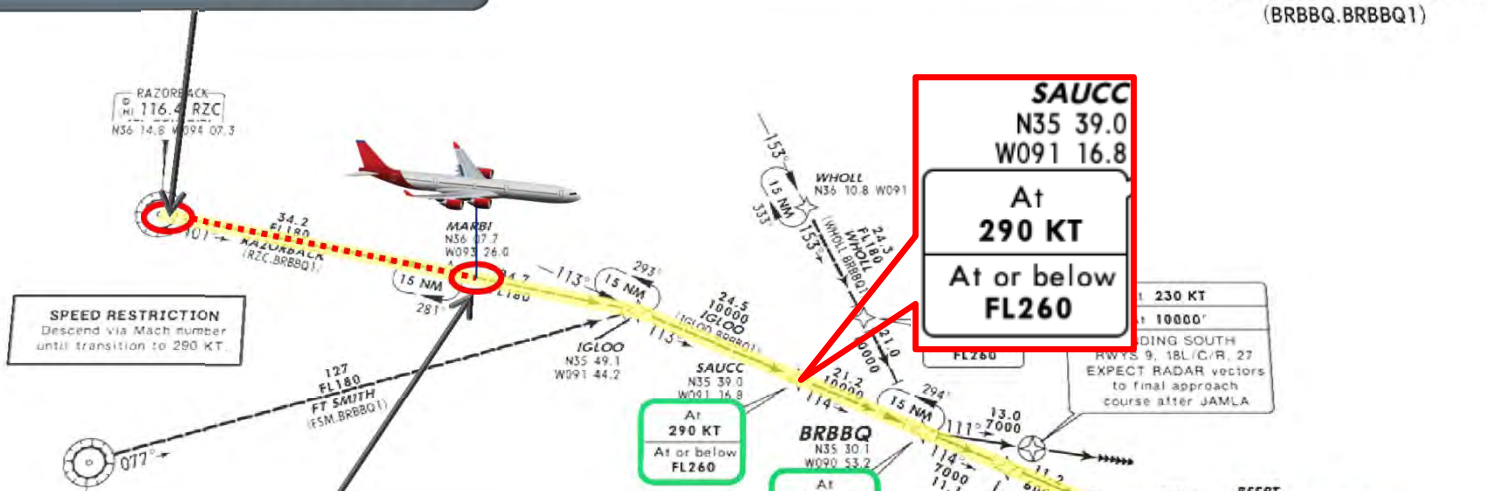
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KMEM/MEM
MEMPHIS INTL

JEPPESEN
31 JAN 14 10-2A E11 & Feb

NBAA
MEMPHIS, TENN
RNAV STAR

ATC Clearance #1:
"Maintain Three One Zero Knots"



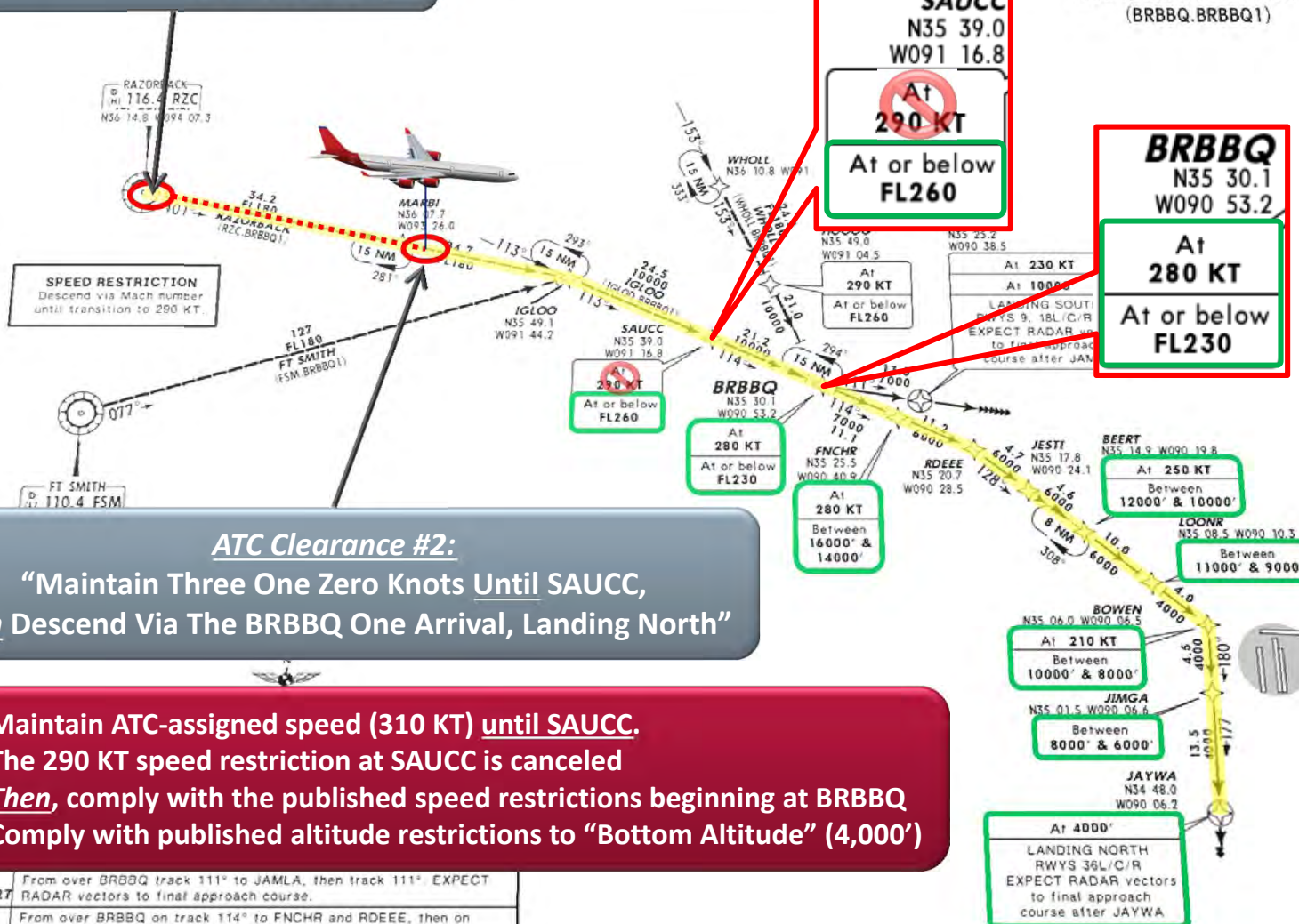
ATC Clearance #2:
"Descend Via The BRBBQ One Arrival, Landing North"

- The last ATC-assigned speed (310 KT) is canceled
- Pilot may adjust speed at their discretion in compliance with 14 CFR 91.117
- Cross SAUCC at 290 KT
- Comply with published altitude restrictions to "Bottom Altitude" (4,000')
- Comply with published speed restrictions

**Recommended That Pilots Not Make
Excessive Speed Variations Without Advising ATC**

KMEM/MEM
MEMPHIS INTLJEPPESEN
31 JAN 14 (10-2A) E11 & FebNBAA
MEMPHIS, TENN
RNAV STAR

ATC Clearance #1: "Maintain Three One Zero Knots"



ATC Clearance #2: "Maintain Three One Zero Knots Until SAUCC, Then Descend Via The BRBBQ One Arrival, Landing North"

- Maintain ATC-assigned speed (310 KT) until SAUCC.
- The 290 KT speed restriction at SAUCC is canceled
- Then, comply with the published speed restrictions beginning at BRBBQ
- Comply with published altitude restrictions to "Bottom Altitude" (4,000')

(SOUTH) 9, 18L/C/R, 27	From over BRBBQ track 111° to JAMLA, then track 111°. EXPECT RADAR vectors to final approach course.
(NORTH) 36L/C/R	From over BRBBQ on track 114° to FNCHR and RDEEE, then on track 128° to JESTI, BEERT, LOONR and BOWEN, then track 180° to JIMGA, track 177° to JAYWA, then track 177°. EXPECT RADAR vectors to final approach course.

CHANGES: New procedure at this airport.

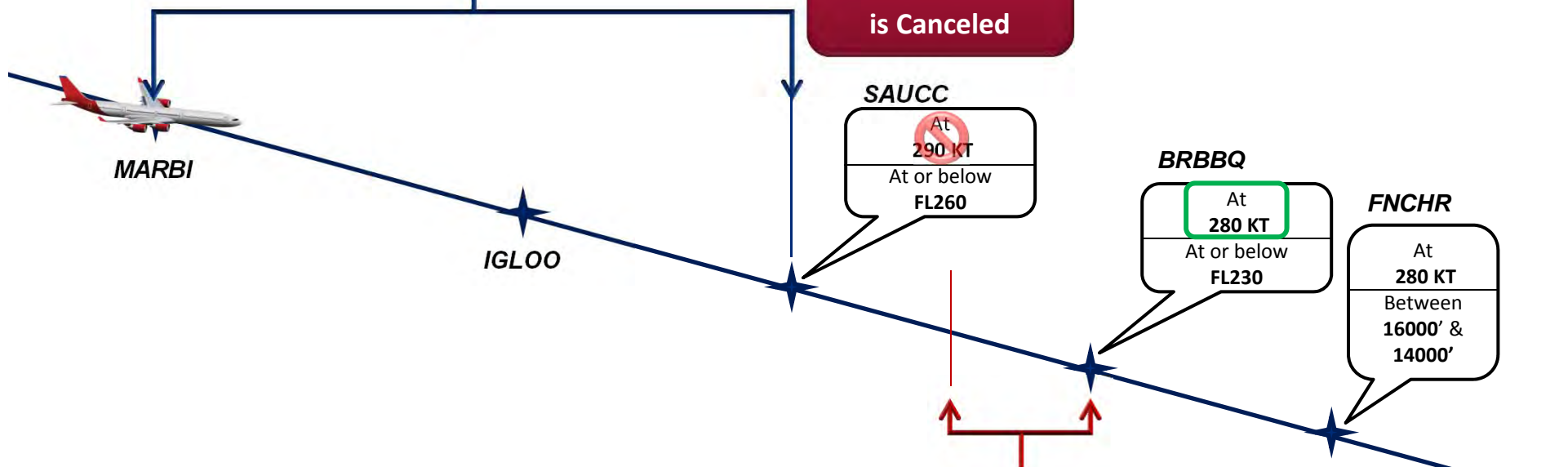
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ATC Clearance #2:
 “Maintain Three One Zero Knots Until SAUCC,
Then Descend Via The BRBBQ One Arrival, Landing North”

ATC-Assigned Speed
 310 KT Until SAUCC

Speed Restriction
 at SAUCC
 is Canceled



Begin Speed Reduction At The Minimum Distance
 Necessary Commensurate With Normal Aircraft
 Performance To Comply With The Next Published
 Speed Restriction (BRBBQ At 280 KT)

KPHX/PHX
PHOENIX SKY HARBOR INTL

JEPPESSEN
30 MAR 12
EFF 5 Apr 10-2D

PHOENIX, ARIZ
RNAV STAR

ATC Clearance:
**“Fly Heading Two Seven Zero, Vectors For Weather Over QUENY,
 Descend And Maintain One Zero Thousand,
 Expect To Resume The EAGUL Five Arrival”**

- **Maintain published speed (250 KT)**
- **Maintain ATC-assigned altitude (10,000')**
- **Expect to resume EAGUL Five**

Direct distance to Phoenix Sky Harbor Intl from:

BASBL 16 NM
GIPSE 10 NM
JAGAL 10 NM
ZAMEX 10 NM

COMMS LOST COMMS LOST COMMS LOST COMMS LOST COMMS LOST COMMS LOST COMMS

▶ Landing Rwy 7L: At BASBL turn LEFT, intercept and execute Rwy 7L ILS approach. If unable, proceed direct PXR and hold **MAINTAIN 9000'**.

▶ Landing Rwy 7R: At BASBL turn LEFT, intercept and execute Rwy 7R ILS approach. If unable, proceed direct PXR and hold **MAINTAIN 9000'**.

▶ Landing Rwy 8: At BASBL turn LEFT, intercept and execute Rwy 8 ILS approach. If unable, proceed direct PXR and hold **MAINTAIN 9000'**.

▶ Landing Rwy 25L: At GIPSE, intercept and execute Rwy 25L ILS approach. If unable, proceed direct PXR and hold, **MAINTAIN 9000'**.

▶ Landing Rwy 25R: At ZAMEX, intercept and execute Rwy 25R RNAV GPS approach. If unable, proceed direct PXR and hold, **MAINTAIN 9000'**.

▶ Landing Rwy 26: At JAGAL, intercept and execute Rwy 26 ILS approach. If unable, proceed direct PXR and hold, **MAINTAIN 9000'**.

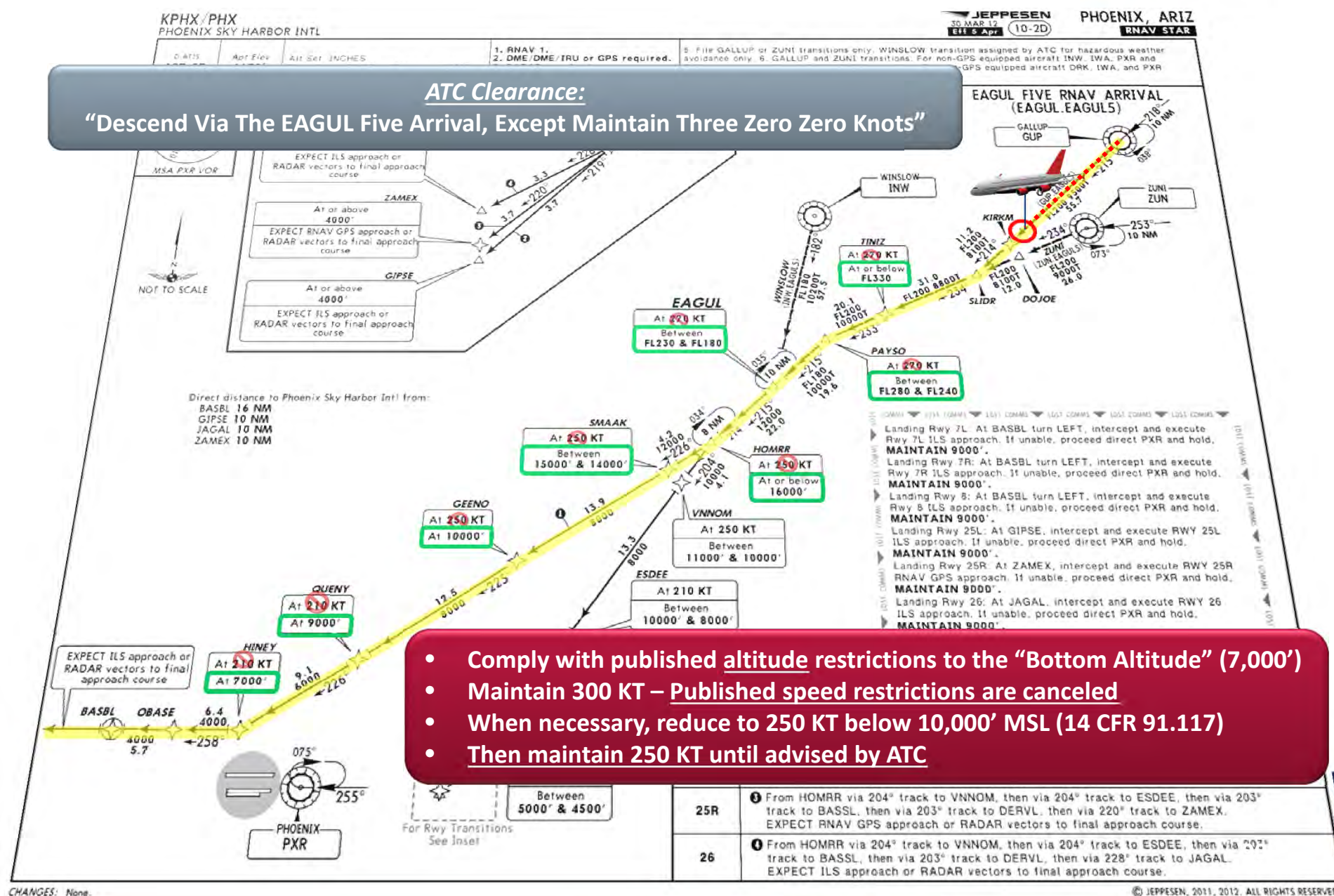
ROUTING

From EAGUL via 215° track to HOMRR. Then as depicted on runway transitions.

RWY	LANDING
7L/R, 8	① From HOMRR via 226° track to SMAAK, then via 226° track to GEENO, then track to QUENY, then via 226° track to HINEY, then via 258° track to OBAS 258° track to BASBL, then via 258° track. EXPECT ILS approach or RADAR final approach course.
25L	② From HOMRR via 204° track to VNNOM, then via 204° track to ESDEE, then track to BASSL, then via 203° track to DERVL, then via 219° track to GIP: ILS approach or RADAR vectors to final approach course.

Speed Adjustments

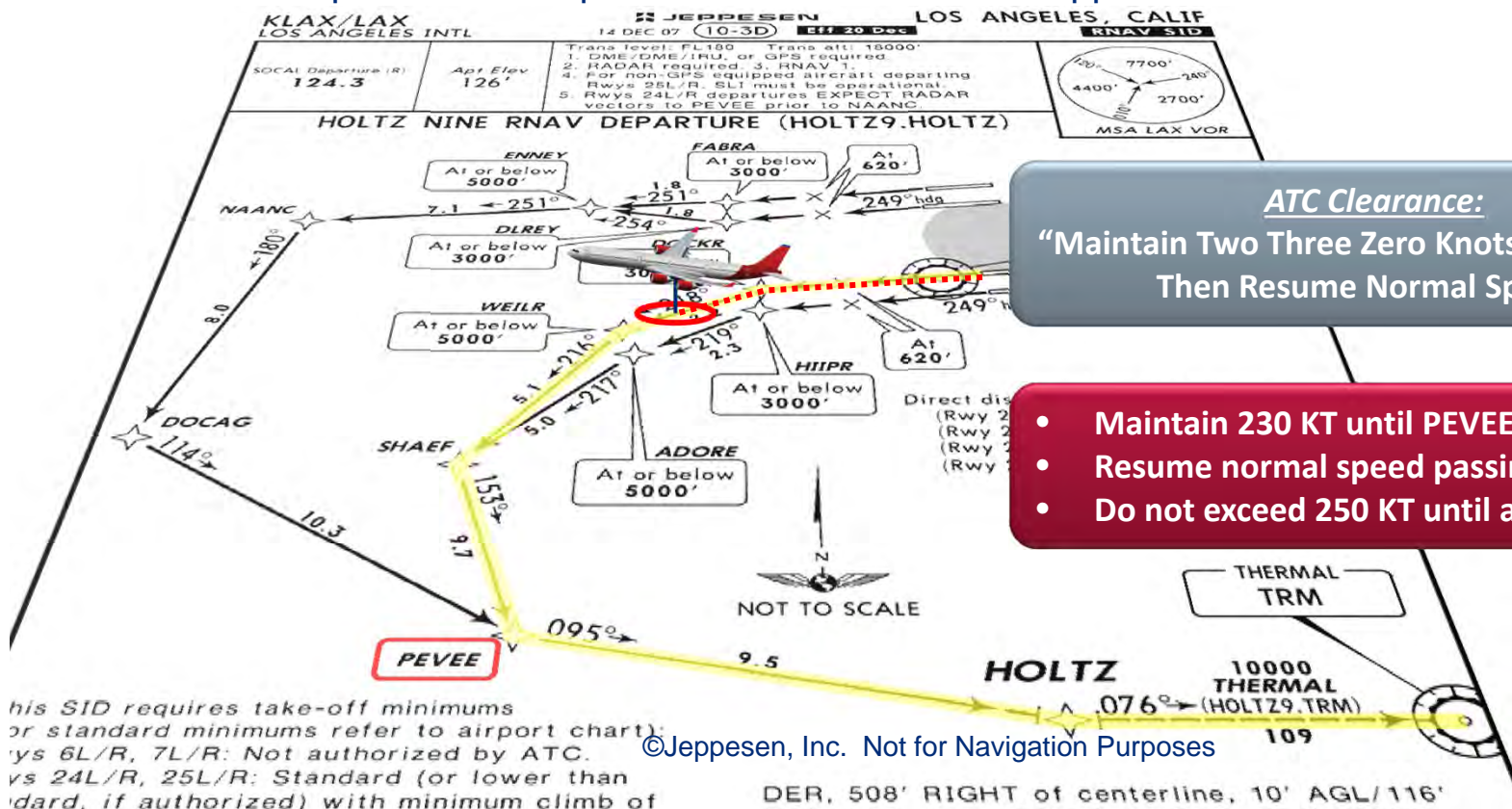
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Phraseology

“Resume Normal Speed”

- Used to terminate ATC assigned speed adjustments on segments where no published speed restrictions apply
- It does not delete speed restrictions on upcoming segments of flight and does not relieve the pilot of those speed restrictions which are applicable to 14 CFR Section 91.117



ATC Clearance:
“Maintain Two Three Zero Knots Until PEVEE, Then Resume Normal Speed”

- Maintain 230 KT until PEVEE
- Resume normal speed passing PEVEE
- Do not exceed 250 KT until above 10,000'

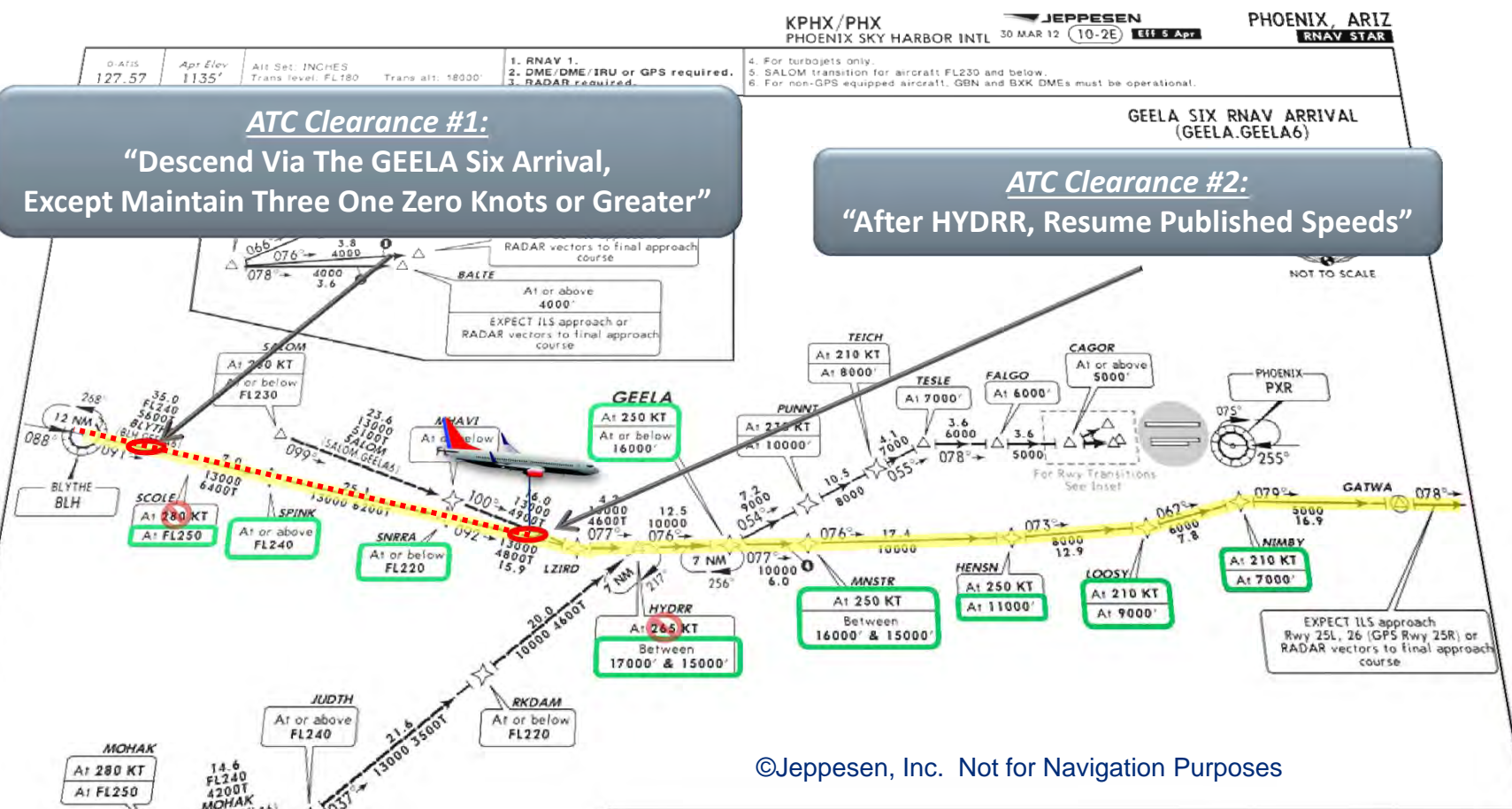
Phraseology

“Resume Published Speed”

- Used by ATC to terminate a speed adjustment where speed restrictions are published on a charted procedure

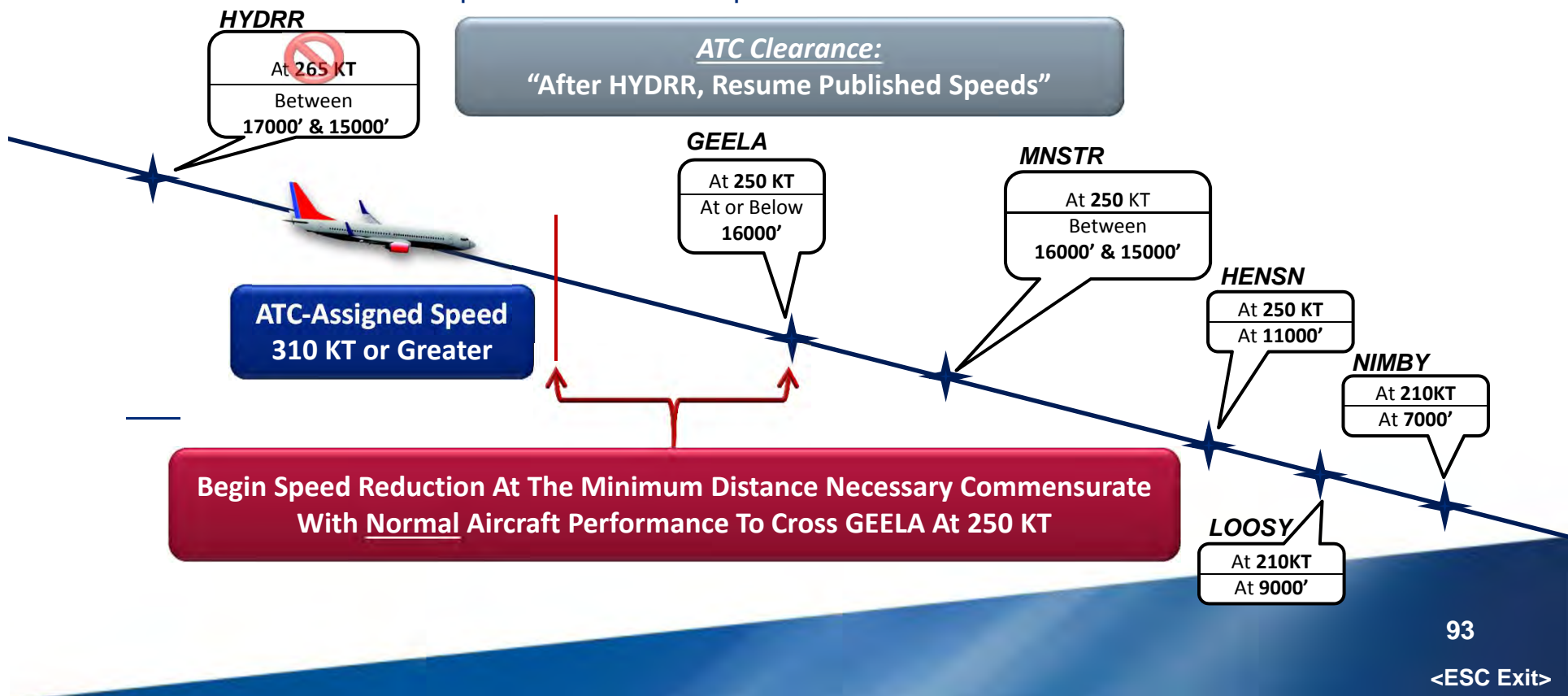
ATC Clearance #1:
“Descend Via The GEELA Six Arrival,
Except Maintain Three One Zero Knots or Greater”

ATC Clearance #2:
“After HYDRR, Resume Published Speeds”



Complying With Speed Restrictions

- When instructed to “resume published speed,” ATC anticipates pilots will begin adjusting speed the minimum distance necessary prior to a published speed restriction so as to cross the waypoint/fix at the published speed
- Once at the published speed, ATC expects pilots will maintain the published speed until additional adjustment is required to comply with further published or ATC assigned speed restrictions or as required to ensure compliance with 14 CFR Section 91.117



Phraseology

“Delete Speed Restrictions”

- ATC will advise the pilot to “*Delete Speed Restrictions*” when ***either*** ATC assigned or published speed restrictions on a charted procedure are no longer required
- When deleting published restrictions, ATC must ensure obstacle clearance until aircraft are established on a route where no published restrictions apply
- This does not relieve the pilot of those speed restrictions which are applicable to 14 CFR Section 91.117

Speed Adjustments



KLAS/LAS
McCARRAN INT

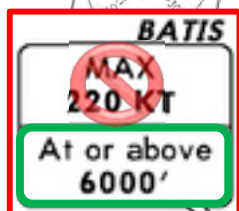
LAS VEGAS Dep
133.95

Initial IFR Clearance:

"Cleared...STAAV Four Departure, Dove Creek Transition, Climb Via SID..."

STAAV FOUR RNAV DEPARTURE
(STAAV4.STAAV)

SPEED: MAX 220 KT UNTIL BATIS



After Takeoff - ATC Clearance:
"Delete Speed Restrictions"

- Delete all speed restrictions on STAAV SID
- Do not exceed 250 KT until above 10,000' (14 CFR 91.117)
- Comply with all published altitude restrictions
- Climb to the published "Top Altitude" (FL 190)

**When Deleting Published Restrictions, ATC Must Ensure
Obstacle Clearance Until The Aircraft Is Established On A Route
Where No Published Restrictions Apply**

(Rwy 25R) to: LEELN 6 NM

RWY	INITIAL CLIMB	ALTITUDE
25L	Climb heading 255° to at or above 2680' then direct POOLZ, then via 333° track to TOMIS.	MAINTAIN FL190
25R	Climb heading 255° to at or above 2680' then direct LEELN, then via 332° track to TOMIS.	
ROUTING		
From TOMIS via 032° track to BATIS, then via 054° track to MEDOE, then via 074° track to STAAV. Then via transition. EXPECT filed altitude 10 minutes after departure.		

Rwy 25L: Standard (or lower than standard, if authorized) with ATC climb of 330' per NM to 13000'.

Rwy 25R: 300-2 or standard (or lower than standard, if authorized) with minimum climb of 313' per NM to 4500', ATC climb of 330' per NM to 13000'.

Gnd speed-KT	75	100	150	200	250	300
313' per NM	391	522	783	1043	1304	1565
330' per NM	413	550	825	1100	1375	1650

954' from DER, 546' LEFT of centerline, up to 40' AGL/2245' MSL. Obstacle light DME 533' from DER, 445' LEFT of centerline, 18' AGL/2207' MSL. Building 1822' from DER, 652' LEFT of centerline, 59' AGL/2238' MSL. Road 669' from DER, 477' LEFT of centerline, 29' AGL/2208' MSL. Rod on building 534' from DER, 369' LEFT of centerline, 13' AGL/2202' MSL. Road 678' from DER, 17' RIGHT of centerline, 15' AGL/2201' MSL. Obstacle light on LOC 534' from DER, 1' from centerline, 6' AGL/2195' MSL.

<ESC Exit>

CHANGES: None.

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Briefing Topics – Additional Resources



Federal Aviation
Administration

**FAA Climb Via &
Descend Via InFO**



Federal Aviation
Administration

**Notice To Airman
(GENOT)**



**Frequently Asked
Questions**



**FAA PBN
Resources**



**NAV CANADA
RNAV Phraseology**

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