Letter of Agreement

Effective: November 3, 2022

1) **PURPOSE.** This letter of agreement (LOA) delegates airspace to Northern California TRACON (NCT) and establishes procedures for coordination and control of air traffic between Oakland ARTCC (ZOA) and NCT. The procedures contained in this LOA may be modified on an individual basis with proper coordination. This agreement is supplemental to Order JO 7110.65, Air Traffic Control.

2) **GENERAL.**
   - **a)** NCT has continuous control of their airspace.
   - **b)** Except for aircraft entering ZOA Sectors 11 or 41 from the bay, the minimum radar separation for aircraft being transferred between facilities must be 5 nautical miles (NM), constant or increasing, at the time of communications change. Aircraft entering ZOA Sectors 11 or 41 from the bay with diverging courses may be separated by 3 NM constantly increasing to 5 NM at the time of communications change.
   - **c)** Inappropriate Altitude for Direction of Flight (IAFDOF) may be assigned in accordance with FAA JO7110.65 and with prior approval from the receiving facility.
   - **d)** NCT has control for RV 30 degrees left/right, speed adjustments, and descent except where noted in Attachment 3. Exception: Speed reductions on SFO OPD STARs must be verbally coordinated.

   NOTE: *NCT is responsible for separation between DYAMD/ALWAYS STAR and OAKES/BANND STAR arrivals when exercising control under this section.*

   - **e)** ZOA has control for RV 30 degrees left/right, speed adjustments, and climb except where noted in Attachment 3. Exception: Speed reductions on successive SFO/OAK departures routed over the same NCT exit fix must be verbally coordinated.
   - **f)** NCT must advise ZOA of changes in NCT's traffic and airspace configuration.
   - **g)** NCT must notify Sector 44 of changes in runway configuration at RNO.
   - **h)** NCT must issue the appropriate altimeter to aircraft descending via an OPD STAR.
   - **i)** The ZOA/NCT controller receiving a handoff from the other facility is responsible for any coordination that results from the use of the standard control or control additions/restrictions contained in Attachment 3.
   - **j)** Interfacility coordination must be accomplished with the appropriate sector or as identified in Attachment 3; that sector is then responsible for further interfacility coordination.
   - **k)** Unless otherwise specified in Attachment 3 in accordance with this agreement, aircraft must be handed off to the first sector the aircraft enters in the receiving facility.
   - **l)** ZOA Sector 11 must advise NCT Seca sector of the status of the Hunter military operating areas (MOAs). When the Hunter MOA is active aircraft must be routed as indicated in Attachment 3.
   - **m)** ZOA Sector 11 must advise NCT Seca sector when R2513 is active at or above 130. When R2513 is active aircraft will be assigned a heading east or west of R2513.
   - **n)** Unless otherwise coordinated, all qualified aircraft must be cleared via the appropriate RNAV SID or STAR.
   - **o)** Non-RNAV arrival aircraft not assigned a conventional route will be assigned a heading to simulate the appropriate RNAV STAR or route as indicated in Attachment 3.

p) Except as defined in Attachment 1, NCT has control for direct first fix on assigned route outside of NCT's airspace.

3) PRE-ARRANGED COORDINATION PROCEDURES

a) The pre-arranged coordination procedures contained in this agreement are the only valid P-ACP procedures.

b) Except when the Hunter MOA is active, southbound departures exiting via Morgan Sector's airspace that are requesting FL200 or higher and handed off directly to ZOA Sector 14 must be laterally (5nm) separated from the SILCN and SERFR arrival routes prior to exiting NCT airspace.

c) SERFR STAR:

- **i)** ZOA Sector 14 must display full data blocks including the aircraft's assigned altitude.
- **ii)** Aircraft must be established on and descending via the SERFR no later than NRRLI waypoint.
- **iii)** ZOA Sector 14 must initiate an automated hand-off no later than 10 NM south of NRRLI.
- **iv)** ZOA Sector 14 may penetrate the airspace of NCT Morgan/Boulder sector with aircraft established on and descending via the SERFR arrival.
- **v)** Transfer of communications must occur after the completion of the radar handoff or no later than NRRLI waypoint regardless of hand-off status.

d) SILCN STAR

- **i)** ZOA Sector 14 must display full data blocks including the aircraft's assigned altitude.
- **ii)** Aircraft must be established on and descending via the SILCN no later than SILCN waypoint.
- **iii)** ZOA Sector 14 must initiate an automated hand-off no later than 15nm south of SILCN.
- **iv)** ZOA Sector 14 may penetrate the airspace of NCT Morgan sector with aircraft established on and descending via the SILCN arrival.
- **v)** Transfer of communications must occur after the completion of the radar handoff or no later than SILCN waypoint regardless of handoff status.

e) BDEGA STAR

- **i)** ZOA Sector 41 must display full data blocks including the aircraft's assigned altitude.
- **ii)** Aircraft must be established on and descending via the BDEGA no later than LOZIT waypoint.
- **iii)** ZOA Sector 41 must initiate an automated hand-off no later than 10nm north/northwest of LOZIT.
- **iv)** ZOA Sector 41 may penetrate the airspace of NCT Boulder/Sutro sector with aircraft established on and descending via the BDEGA arrival.
- **v)** Transfer of communications must occur after completion of the radar handoff or no later than LOZIT waypoint regardless of hand-off status.

f) BRIXX STAR

- **i)** ZOA Sector 41 must display full data blocks including the aircraft's assigned altitude.
- **ii)** Aircraft must be established on and descending via the BRIXX no later than ZINNN waypoint.
- **iii)** ZOA Sector 41 must initiate an automated hand-off no later than 10nm north/northwest of ZINNN.
- **iv)** ZOA Sector 41 may penetrate the airspace of NCT Boulder/Richmond/Sutro sector with aircraft established on and descending via the BRIXX arrival.
- **v)** Transfer of communications must occur after completion of the radar handoff or no later than ZINNN waypoint regardless of hand-off status.

4) FLIGHT DATA

a) Aircraft will be routed via Adapted Departure Routes (ADR's), Adapted Departure and Arrival Routes (ADAR's) or as specified in Attachment 3. Routes of flight not in compliance must be individually coordinated.

b) ZOA is responsible for entering all verbally coordinated route and altitude changes into the computer.

5) ARRIVALS

a) If neither an ADR/ADAR/AAR nor Attachment 3 does not apply, direct destination is approved.

b) ZOA must assign an Optimized Profile Descent (OPD) STAR and transition when applicable. Except as defined in Attachment 3, assign transition as follows:

Airport	*Runway*	*Transition*
SJC	30L/R	Rwy30 Transition
SJC	12L/R	Rwy12 Transition
SMF	35L/R	Rwy35 Transition
SMF	17L/R	Rwy17 Transition

c) Unless specified otherwise in Attachment 1, ZOA must ensure that all aircraft assigned an OPD STAR are established on and descending via the arrival, prior to entering NCT Airspace.

d) After initial coordination with the NCT sector has been established, ZOA may penetrate and hold at the following fixes in NCT's airspace without further coordination. NCT will protect the holding pattern within their delegated airspace at the following altitudes:

i) LOZIT, at and above 11,000 feet

ii) Point Reyes (PYE) VORTAC, at and above 9,000 feet (SFOE RWY 10 only).

iii) STINS, at and above 7,000 feet (SFOW only).

iv) STINS, at and above 9,000 feet (SFOE only).

v) PIRAT, at 10,000 feet to and including 14,000 feet.

e) West Plan Dual Arrival Route (DAR) Procedures for SFO.

i) The decision to utilize dual arrival streams must be a collaborative process between the ZOA and NCT Prior to utilizing DARs, the following conditions must be in effect:
(1) NCT must be in a west-plan configuration;
(2) SFO must be landing on Runways 28L/R;
(3) The NCT and ZOA will determine the appropriate arrival rate when DARs are in use; and

ii) NCT must make the final determination to utilize DARs to SFO.

f) High performance turboprop aircraft may be routed via the applicable jet route STAR.

6) EN-ROUTE

a) Aircraft transiting NCT airspace at or below 15,000 feet southwest of a Scaggs Island (SGD) VORTAC – PXN line must be assigned one of the following routes:

i) Aircraft northbound must be established on V27 by EUGEN. During SFOW operations, aircraft landing at airports in ZOA Sector 41 may be routed via T263 or V301 SUNOL SGD direct to their destination.

ii) Aircraft southbound must be established on V27 by STINS.

iii) During SFOW, aircraft transitioning through NCT airspace either northbound or southbound may utilize T257 at or below 10,000 feet. Aircraft utilizing this route must be established on T257 while in the confines of NCT airspace.

7) SOUTH LAKE TAHOE AIRPORT

a) ZOA is the clearance authority for all approaches into and departures out of TVL.

b) Arrivals

i) ZOA must coordinate IFR arrivals with NCT as appropriate. When an IAP is coordinated, NCT must protect 12,000 feet and below west of the RNO localizer.

ii) NCT must obtain approval from ZOA prior to issuing an approach clearance into TVL. Prior to terminating radar service, NCT must instruct the aircraft to report missed approach, landing, or cancellation of IFR on ZOA 127.95

c) Departures

i) ZOA must coordinate departures utilizing the TVL localizer or SHOLE Standard Instrument Departure (SID) with NCT.

ii) When a departure is coordinated, NCT must protect 13,000 feet and below in the SHOLE Non-Radar holding pattern.

d) Published instrument procedures at TVL conducted simultaneously with published instrument procedures at Truckee-Tahoe (TRK) are not authorized.

8) TRUCKEE-TAHOE (TRK) AIRPORT

a) ZOA is the clearance authority for all approaches into and departures out of TRK.

b) Arrivals

i) ZOA must coordinate IFR arrivals with NCT as appropriate. When an IAP is coordinated, NCT must protect 12,400 feet and below within the holding pattern airspace.

ii) NCT must obtain approval from ZOA prior to issuing an approach clearance into TRK. Prior to terminating radar service, NCT must instruct the aircraft to report missed approach, landing, or cancellation of IFR on ZOA 127.95

c) Departures

i) ZOA must coordinate departures with NCT.

ii) When a departure is coordinated, NCT must protect 13,000 feet and below within the holding pattern airspace.

d) Published instrument procedures at TRK conducted simultaneously with published instrument procedures at TVL are not authorized.

9) MINDEN-TAHOE (MEV)/ CARSON CITY (CXP) AIRPORTS

a) NCT is the clearance authority for all approaches into and departures out of MEV/CXP.

b) ZOA will coordinate with NCT prior to issuing an approach to CXP.

c) The preferred approach at MEV is the GPS-A.

d) For aircraft cleared via the GPS-B (MEV) or the RNAV (GPS) A (CXP):

i) Prior to terminating radar service, ZOA must instruct the aircraft to report missed approach, landing, or canceling IFR on NCT 119.2.

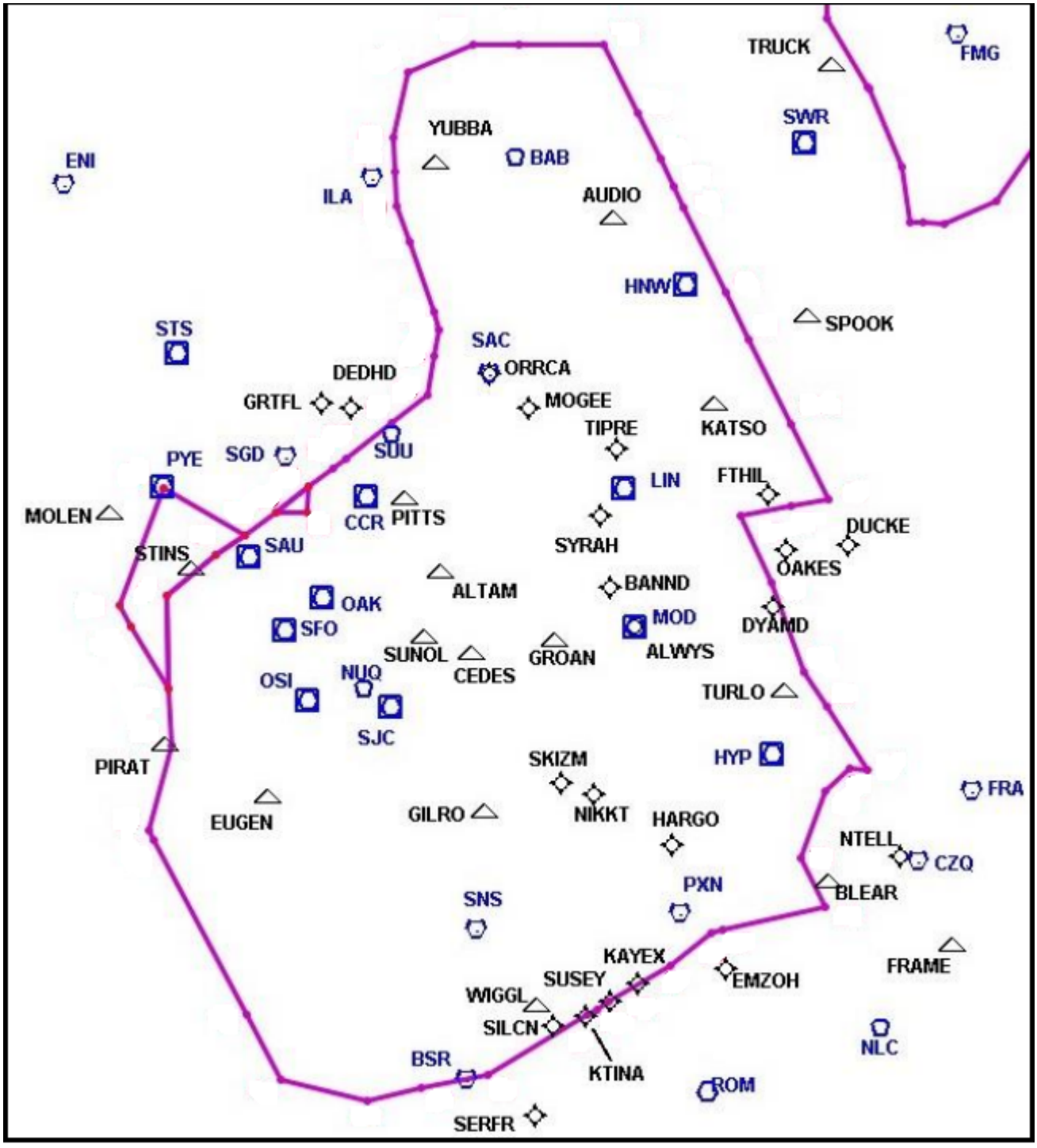
10) SUSANVILLE MUNICIPAL (SVE) AIRPORT

- **a)** ZOA is the clearance authority for all approaches into and departures out of SVE.
- **b)** For aircraft cleared via the RNAV RWY 29 IAP:
  - **i)** Prior to terminating radar service, NCT must instruct the aircraft to report missed approach, landing, or canceling IFR on ZOA 127.95.
  - **ii)** NCT must protect 14,000 feet and below northwest of HALLE until advised that the approach is terminated.
- **c)** Prior to approving or issuing any other procedure at SVE, ZOA must coordinate with NCT. NCT must protect 14,000 feet and below northwest of HALLE until advised that the procedure is terminated.

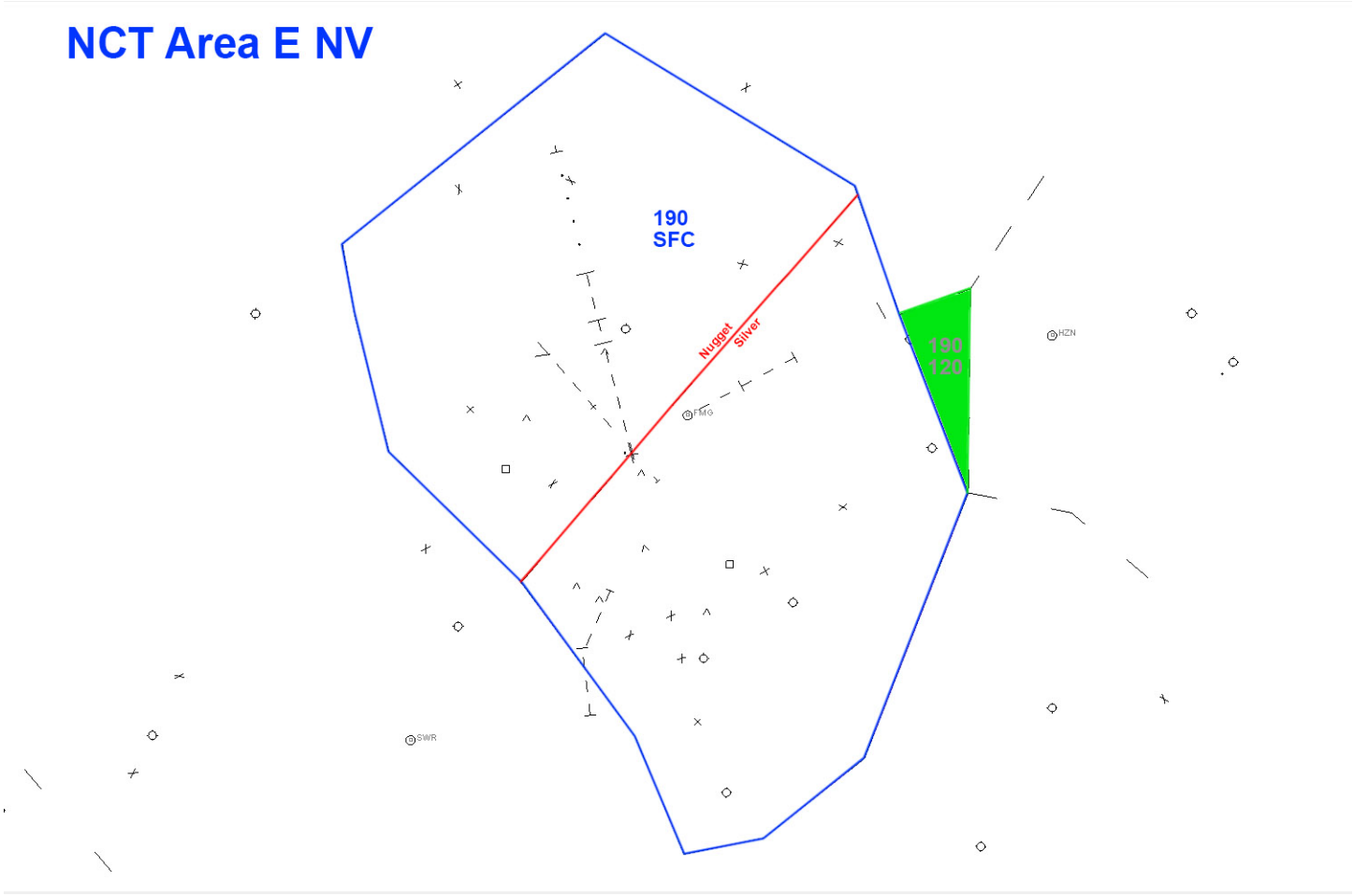
11) SILVER SPRINGS (SPZ) AIRPORT

- **a)** When NAS Fallon RATCF (NFA) is open, they are the clearance authority for IFR arrivals and departures at SPZ. At all other times ZOA is the clearance authority for IFR operations at SPZ.
- **b)** When ZOA is the IFR clearance authority ZOA will coordinate with NCT prior to issuing an IFR approach or departure at SPZ.
- **c)** Whenever the SPZ RNAV RWY 24 approach is issued:
  - **i)** ZOA must instruct all flights descending via the KENNO STAR to maintain 11,000 feet MSL after CHIME waypoint until the SPZ approach is terminated or clear of NCT airspace.
  - **ii)** Both facilities must protect the missed approach procedure until either NFA or ZOA advises the flight has landed, cancelled IFR, or is clear of the protected airspace.
- **d)** When either the SPZ RWY 06 Obstacle Departure Procedure (ODP) or the SPZ RWY 24 Visual Climb Over Airport (VCOA) is issued, NCT and ZOA must protect both the departure procedure airspace and the climb-in-hold procedure at Hazen VOR until the flight is either radar identified, or NFA or ZOA advises the flight has departed the hold pattern.

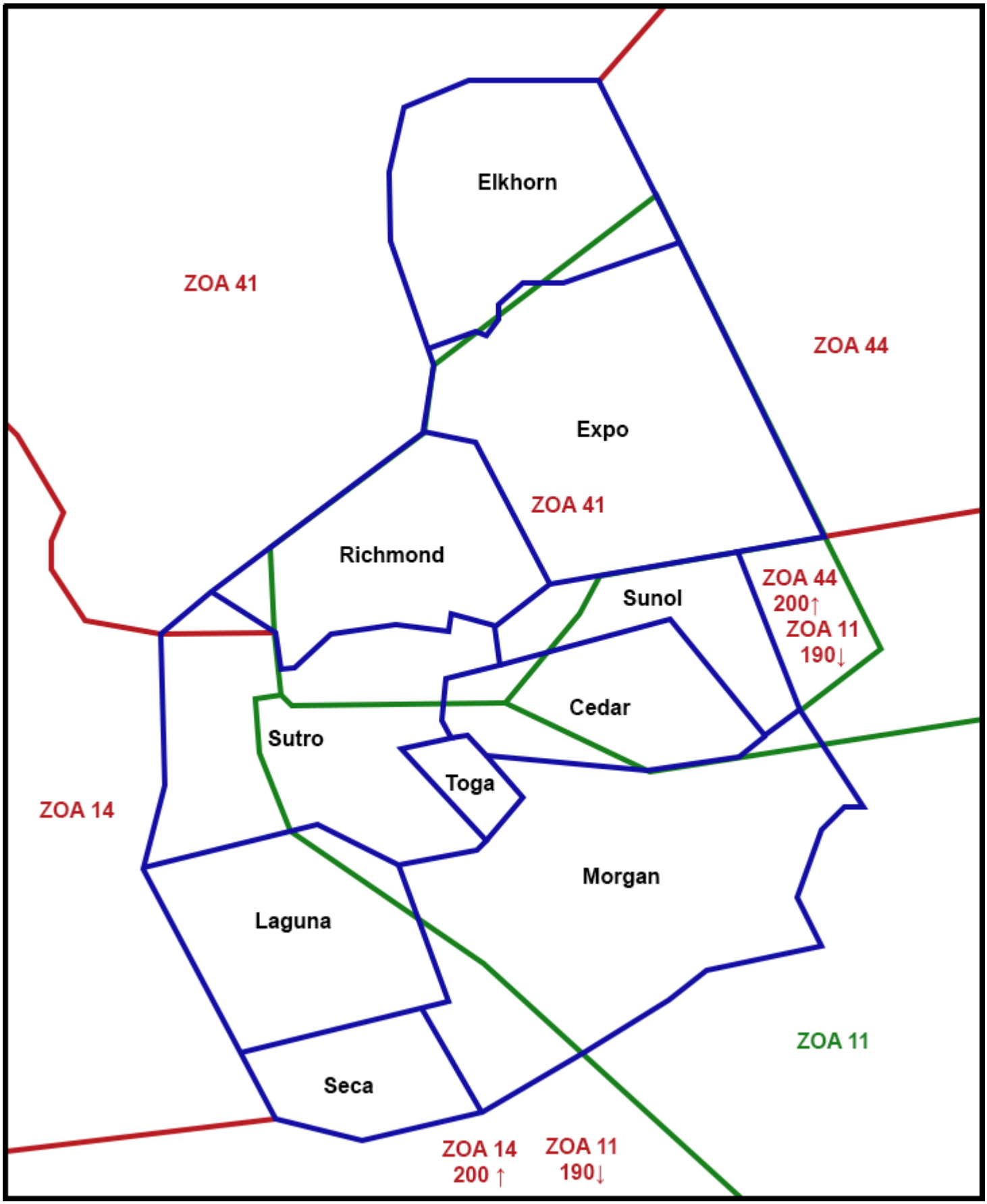
ATTACHMENT 1. DELEGATION OF AIRSPACE



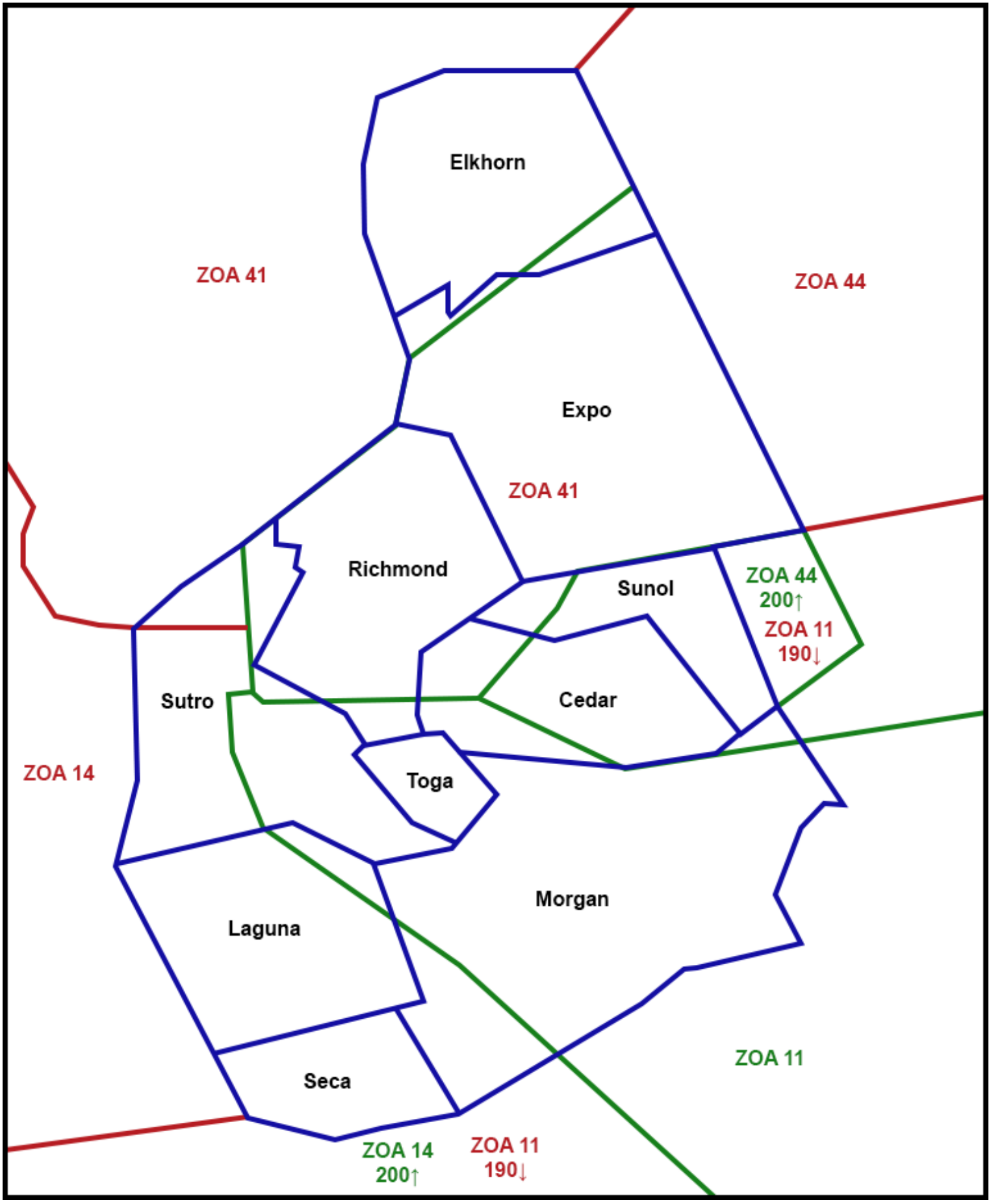
ADJACENT AIRSPACE STRATIFICATION AND SECTORIZATION.



SFO west plan and SMF Runway 17.



SFO east plan and SMF Runway 35.



ATTACHMENT 2. DEFINITIONS, HANDOFF CODES, AND FREQUENCIES

1. DEFINITIONS

Aircraft Types. Assign routes and altitudes based on the following definitions

P	Non-jet aircraft with a cruise speed of 179 knots or less
T	Non-jet aircraft with a cruise speed of 180 knots or greater
J	Jet aircraft and 4-engine turboprop aircraft

Airport Configuration and Traffic Flow Descriptions. Assign routes and altitudes based on the following airport configuration and traffic flow descriptions:

(SFOW)	SFO landing Runways 01 or 28 OAK landing Runways 28 and 30, SJC landing Runways 30.
(SFOE)	SFO landing Runways 10 or 19, OAK landing Runways 10 and 12, SJC landing Runways 12.
(OAKE)	SFO landing Runways 01 or 28 and OAK landing Runways 10 and 12
(SJCE)	SFO landing Runways 01 or 28 OAK landing Runways 28 and 30, SJC landing Runway 12

2. ZOA AND NCT FREQUENCIES AND HANDOFF CODES

NCT SECTOR	FREQUENCY		ZOA SECTOR	FREQUENCY
BOULDER (Q2B)	133.95		Sector 11 (C11)	133.70
CEDAR (Q2Z)	128.32		Sector 14 (C14)	134.55
ELKHORN (Q5E)	125.40		Sector 36 (C36)	119.97
EXPO (Q5X)	127.40		Sector 41 (C41)	125.85
GROVE (Q3G)	125.35		Sector 44 (C44)	127.95
LAGUNA (Q2G)	128.57			
LICKE (Q1L)	120.10			
MORGAN (Q1M)	124.52			
NILES (Q2N)	134.50			
NUGGET (Q8N)	126.30			
RICHMOND (Q4R)	120.90			
SECA (Q2S)	127.15			
SILVER (Q8S)	119.20			
SUNOL (Q3S)	124.80			
SUTRO (Q4U)	135.10			
VALLEY (Q3Y)	125.10			

ATTACHMENT 3. ARRIVAL, DEPARTURE, AND OVERFLIGHT ROUTES AND ALTITUDES

1. NCT has control for RV 30 degrees left/right, speed adjustments, and descent except where noted in the tables below. Exception: Speed reductions on SFO OPD STARs must be verbally coordinated.
2. ZOA has control for RV 30 degrees left/right, speed adjustments, and climb except where noted in the tables below. Exception: speed reductions on successive SFO/OAK departures routed over the same NCT exit fix must be verbally coordinated.
3. Unless otherwise coordinated, all qualified aircraft must be cleared via the appropriate RNAV SID or STAR.
4. Non-RNAV arrival aircraft not assigned a conventional route will be assigned a heading to simulate the appropriate RNAV STAR or route as indicated in the tables below.
5. Control additions/restrictions listed in the tables below are upon contact unless otherwise noted.

Table 1-1. From Sector 11 to NCT west of NLC.

Destination	Route	ACFT	Altitude	Handoff To	Requirements
SFO (SFOW)	SERFR STAR (RNAV)	J	At filed altitude		
SFO (SFOE)	WWAVS STAR (RNAV)				
SFO (SFOW)	BSR SHOEY OSI or SNS V25 OSI	T P			
SFO (SFOE)	BSR/SHOEY V27 HADLY SAU				
NUQ	HOSNU	J T	↓ 160 or level at lower filed altitude		
SJC (SFOW)	SILCN STAR (RNAV) or SNS GILRO	J	At filed altitude		
SJC (SFOE/SJCE)	SILCN STAR (RNAV) or SNS JESEN	J T			
SJC	GILRO	T P	↓160 or lower filed		
RHV	GILRO	J T P			
OAK (SFOW)	EMZOH STAR (RNAV)	J	Descend Via	MORGAN	
OAK (SFOE)	SKIZM STAR (RNAV)				
OAK (SFOW, SFOE, OAKE) HWD	PXN V301 SUNOL Or PXN STAR	J T P	↓ FL200		
APC DVO STS O69 HES CA35 (SFOW)	OAK SAU			SUTRO	
APC DVO STS O69 HES CA35 (SFOE)	SFO SAU				
LVK	MOD UHHUT			MORGAN	
SUU CCR	MOD OAKEY				

Table 1-1 (continued). From Sector 11 to NCT west of NLC.

Destination	Route	ACFT	Altitude	Handoff To	Requirements
SCK C83 TCY O27 1O3	MOD				
PAO	DOCAL	J T P	Jets/Turboprops: ↓ 160 Props: ↓ 100		
SQL	DOCAL AMEBY				
E16	Direct				
CVH	Direct				
SNS WVI	SNS	J T P	↓ 100		NCT Control
MRY (RWY10)	PEBBS	J T P			
MRY (RWY28)	WIGGL		X WIGGL @ 100		
APC DVO STS O69 HES CA35 (SFOW)	BSR V27 PYE or V301 SUNOL SGD	T P	@140 or lower filed altitude		
APC DVO STS O69 HES CA35 (SFOE)	BSR V27 PYE or MOD OAKEY	T P	@140 or lower filed altitude		

Table 1-2. From NCT to Sector 11 west of NLC.

From Airport/Sector	Route	ACFT	Altitude	Requirements
HWD OAK CCR	CEDES HARGO BLEAR FRAME	T P	↑ FL190	Established on route by HARGO
CEDAR	Direct First Fix Outside NCT Airspace (EXCEPTION: aircraft ↓ BFL must be routed to AVE..EHF)	J T		**RNAV:** RNAV DP or direct last fix in approach airspace or direct NTELL **CONVENTIONAL:** Direct CZQ/NTELL approved ZOA control
SFO OAK HWD		J		
SFO (SFOE)	SAHEY or GAP SID or Direct CZQ/NTELL	J		
OAK (SFOE)	KATFH, SKYLINE, or OAK SID, or Direct CZQ/NTELL			
SFO (SFOE)	↓ BFL must be routed OSI AVE EHF	T		
SJC	TECKY or SJC SID or MOONY intersection - Direct AVE/CZQ/NTELL	J T		**RNAV:** RNAV DP or direct last fix in approach airspace or direct NTELL **NOTE:** TECKY/MOONY direct CZQ/NTELL: NCT will turn direct CZQ/NTELL no later than 5nm north of TOGA/Morgan Boundary or else RV120
NUQ	SOLN SID or Direct CZQ/NTELL			
LVK SCK TCY C83	PXN AVE or CZQ/FRAME EHF	J T P		

Table 1-2 (continued). From NCT to Sector 11 West of NLC.

From Airport/Sector	Route	ACFT	Altitude	Requirements
MORGAN/SECA	Filed route or direct first fix outside NCT airspace	J T P	↑ FL190 or lower filed altitude	
MORGAN	AVE or FDIO routing (first fix)	J T P		
SECA	BSR V27	J T P		Aircraft @070 must be routed BSR V27 MQO
MRY	Direct BSR/SERFR/TOKIO	J T		(Requesting AOA 090)
SNS WVI	BSR or SUSEY	J T		(Requesting AOA 090)
SQL	Established V27	T		(Requesting AOA 090)

Table 1-3. From Sector 11 to NCT East of NLC.

Destination	Route	ACFT	Altitude	Handoff To	Requirements
SMF	SUUTR STAR (RNAV)	J	Descend Via	SUNOL	Control for speed only
	TURLO LIN	J T	↓ FL200		NCT control for RV right and speeds North of TURLO AOB FL230
SUU CCR	BMBER STAR (RNAV)	J	Descend Via		Control for speed only
SUU	TURLO LIN OAKEY	J T	↓ FL200		NCT control for RV right and speeds North of TURLO AOB FL230
MCC BAB MHR SAC	TURLO LIN				
NUQ	HOSNU	J	↓160 or lower filed altitude		
SCK	MOD or DUCKE GONAQ HONEZ DIJER SIMMS	J T P	↓ 140 or level at lower filed altitude		Direct SIMMS approved if south of GLLDD
MOD	MOD	J T P	↓ 140 or level at lower filed altitude		
SJC	RAZRR STAR (RNAV)	J T P	Descend via	MORGAN	RAZRR STAR arrivals NCT's control AOB FL230 only
	GILRO via RAZRR Shelf		↓ FL200 or lower filed altitude		
	MOD BORED KLIDE	T	↓ 160	SUNOL	
	BUSHY	P			
SFO (SFOW)	MOD CEDES	T P	↓ 160 or level at lower filed altitude		
SFO (SFOE)	WRAPS REJOY V6 PITTS or SNS V230 SHOEY V27 HADLY SAU				
OAK (SFOE)	BANND STAR	J	↓160 or lower filed altitude	SUNOL	
OAK (OAKE)	SHARR STAR	J			

Table 1-3 (continued). From Sector 11 to NCT East of NLC.

Destination	Route	ACFT	Altitude	Handoff To	Requirements
OAK	PXN V301 SUNOL or PXN STAR	T P	↓ 160 or lower filed altitude	MORGAN	
	BIFFY MAMIE CATTY			SUNOL	
HWD	SHARR STAR or BIFFY MAMIE CATTY	J T P	↓ 160 or lower filed altitude	SUNOL	
	PXN V301 SUNOL or PXN STAR	T P		MORGAN	
LVK	MOD UHHUT		↓ or level at lower filed altitude		AC ↓ to 160 must be AOB FL200 by the NCT lateral boundary
MRY SNS WVI CVH E16	PXN SNS		↓ FL200		
CCR APC STS DVO O69 HES CA35	WRAPS OAKEY		↓ 160 or lower filed altitude	SUNOL	
CCR APC STS DVO O69 HES CA35	MOD OAKEY		Cross 20nm South of MOD @FL200	CEDAR	

Table 1-4. From NCT to Sector 11 east of NLC.

From Airport/Sector	Route	ACFT	Altitude	Requirements
EXPO	FTHIL or FROGO SID	J T	↑ Filed FL190 or lower altitude	
MORGAN	↓ VIS/FAT/FCH via direct CZQ/NTELL	J T P	↓ 110	
LVK SCK TCY C83	CZQ/FRAME EHF	J T P	↑ FL190	

Table 1-5. From Sector 14 to NCT over BSR.

Destination	Route	ACFT	Altitude	Handoff To	Requirements
SFO (SFOW)	SERFR STAR (RNAV)	J	Descend Via	LAGUNA (J) SECA (T/P)	Speed assignments of 250-280 knots IAS do not require coordination. NCT Control Speeds 250-280 knots IAS N of NRRLI
SFO (SFOE)	WWAVS STAR (RNAV)				
SFO (SFOW)	BSR/CARME/ANJEE BSR STAR		↓ FL200		NCT control RV left north of BSR @ FL200 and control RV SKUNK or ANJEE
SFO (SFOW)	BSR SHOEY OSI	T P			
SFO (SFOE)	BSR/SHOEY V27 HADLEY SAU	J T P			NCT control RV west of course when North of BSR
SJC	SILCN STAR (RNAV)	J	Descend Via	MORGAN	NCT Control RV right of course. NCT does **not** require speed coordination. NCT responsible for any further coordination with ZOA Sectors.
SJC (SJCW)	SNS GILRO	J T	X 15NM SOUTH SNS @ FL200		
SJC (SFOE/SJCE)	SNS JESEN	J T			

Table 1-6. From NCT to Sector 14 over BSR.

From Airport/Sector	Route	ACFT	Altitude	Requirements
SFO	SSTIK, WESLA, OFFSH or GAP SID	J T	↑ FL190	**RNAV:** RNAV DP or direct last fix in approach airspace ZOA control
OAK	CNDEL or COAST or NUEVO SID			
MRY	Direct BSR/SERFR/TOKIO	J T		(Requesting AOA FL200)
SNS WVI	BSR or SUSEY	J T		(Requesting AOA FL200)
SQL	Established V27	T		(Requesting AOA FL200)

Table 1-7. From Sector 14 to NCT over the ocean.

Destination	Route	ACFT	Altitude	Handoff To	Requirements
SJC (SFOW)	TPCAT HEPAP SJC	J T P	X TPCAT @100	BOULDER	NCT control Boulder will PO to Sutro if necessary on Tailored Arrivals
SJC (SFOE)	TPCAT HEPAP SJC		X TPCAT @ 80		
SFO OAK (SFOW)	PIRAT OSI		X PIRAT @ 100		
SFO OAK (SFOE)	PIRAT SAU		X PIRAT @ 080		
MRY	Direct		↓ 080		
SFO OAK	PIRAT STAR		X PIRAT @ 100		

Table 1-8. From NCT to Sector 14 over the ocean.

From Airport/Sector	Route	ACFT	Altitude	Requirements
SJC (SFOW)	MOLEN AMAKR BOXER	J	↑ FL190	Heading 260° ZOA control
SFO OAK SJC HWD NUQ PAO RHV SQL HAF MRY (SFOW)	GNNRR SID or oceanic departures direct the filed oceanic transition fix	T P	↑ 130 or lower filed altitude	ZOA control
		J	↑ FL190	
SFO OAK SJC HWD NUQ PAO RHV SQL HAF MRY (SFOE)	Direct ALCOA, BEBOP, or CINNY. All others heading 260.	T P	↑ 130 or lower filed altitude	
		J	↑ FL190	

Table 1-9. From Sector 41 to NCT west of ILA.

Destination	Route	ACFT	Altitude	Handoff To	Requirements
SFO (SFOW)	BDEGA STAR (RNAV)	J T	Descend Via	BOULDER	SUTRO must protect SFO arrivals handed off to BOULDER
	PYE SFO		X 6 NW SFO @110 &250K for Jets		
	PYE STAR or PYE V27 HADLY OSI	T	X STINS @ 070	SUTRO	NCT control for descent
		P	X STINS @ 050		NCT control RV up to 45°
SFO (SFOE)	STLER STAR (RNAV)	J T	Descend Via	BOULDER	NCT control RV up to 45° left or right & ↓ 070
	STINS STAR or PYE STINS		X PYE @ 090 (J)		
		T	X PYE @ 070		NCT control RV up to 45°
		P	X STINS @ 040	GROVE	

Table 1-9 (continued). From Sector 41 to NCT west of ILA.

Destination	Route	ACFT	Altitude	Handoff To	Requirements
OAK HWD (SFOW)	WNDSR STAR (RNAV) (OAK)	J T	Descend Via	RICHMOND	NCT control RV up to 45°
	REBAS OAK		X REBAS @ 070		
		P	X REBAS @ 040		NCT Control RV up to 45°
OAK HWD (SFOE)	AANET STAR (RNAV) (OAK)	J T	Descend Via	GROVE	NCT control vectors, speed adjustments, and ↓ 040
	SAU OAK	J	X 10NW SAU @ 050		
	REBAS OAK	T P	X REBAS @ 040		
OAK HWD (OAKE)	AANET STAR (RNAV) (OAK)	J T	Descend Via		
	SAU OAK		X 10 NW SAU @ 050		
SJC (SFOW)	BRIXX STAR (RNAV)	J T	Descend Via	BOULDER	SUTRO & RICHMOND must protect SJC arrivals handed off to BOULDER
	SAU SFO		X SFO @ 120		
SJC NUQ PAO RHV SQL E16	PYE STAR or PYE V27 HADLY OSI	J *** T P	X STINS @ 050 (SFOW) @ 040 (SFOE)	SUTRO (SFOW) GROVE (SFOE)	NCT control for descent *** Wine country departure jets only
SJC (SFOE)	FRLON STAR	J T	Descend Via	BOULDER	SUTRO must protect SJC arrivals handed off to BOULDER
	BRINY STAR Or PYE BRINY OSI		X FATHM or 20S PYE @110		
NUQ (SFOW)	PYE SFO	J T	X 6NW SFO @120	BOULDER	
NUQ (SFOE)	PYE BRINY OSI		X 20S PYE @ 110		NCT control RV up to 45° left or right & ↓ 070
MRY OAR SNS WVI CVH	PYE V27 SHOEY	J T P	@FL190 or lower filed	SUTRO (SFOW) BOULDER (SFOE)	
HAF	PYE V27 STINS	T	X STINS @ 070	SUTRO (SFOW) BOULDER (SFOE)	
		P	@ 050 (SFOW) @ 040 (SFOE)	SUTRO (SFOW) BOULDER (SFOE)	

Table 1-9 (continued). From Sector 41 to NCT west of ILA.

Destination	Route	ACFT	Altitude	Handoff To	Requirements
BAB MCC MHR LHM PVF GOO	Direct	J T	↓ 120		NCT control
Departures from APC DVO O69 HES STS (SFOW)	SAU OAK	J T	↑ FL190 or lower filed altitude	RICHMOND	Cross NCT Boundary AOA 110 NCT control RV
Departures from APC DVO O69 HES STS (SFOE)	SAU SFO			SUTRO	
APC DVO STS O69 HES CA35	Direct	J T	↓ FL200		

Table 1-10. From NCT to Sector 41 west of ILA.

From Airport/Sector	Route	ACFT	Altitude	Requirements
SFO (SFOW)	GNNRR or MOLEN SID	J	↑ 100	
SFO OAK HWD HAF SQL (SFOW)	GRTFL or DEDHD or RV360	T P	↑ 100	ZOA control
	ENI/RV340	J	↑ FL190 or lower filed altitude	
	GRTFL or DEDHD or RBL			
	SGD	T P	↑ 060 or lower filed altitude	
OAK HWD (SFOW)	ENI	T P	↑ 060	
HAF SQL	V199 OR PYE	J T P		
SJC NUQ PAO RHV E16 (SFOW)	V199 ENI	T P	↑ 080 or lower filed altitude	
SFO OAK HWD PAO SQL NUQ RHV E16 (SFOE)		J	↑ FL190	
	Via SFO HEADING 340°	T		
RICHMOND SUTRO	↓ APC, STS, DVO, or O69 CA35 HES via V27 PYE from west of SAU	J T P	SFOW @060 SFOE @050	ZOA control
	↓ APC, STS, DVO or O69 CA35 HES via Direct from east of SAU		@ 050	
ELKHORN EXPO	Direct First Fix Outside NCT Airspace	J T P	↑ 120	
	APC DVO STS HES CA35 O69 via direct		↓ 120	ZOA control vectors, speed, and descent to 080 west of SAC VOR
RICHMOND SUTRO	↓ APC, STS, DVO, or O69 CA35 HES via V27 PYE from west of SAU	J T P	SFOW @060 SFOE @050	ZOA control

Table 1-10 (continued). From NCT to Sector 41 west of ILA.

From Airport/Sector	Route	ACFT	Altitude	Requirements
BOULDER SUTRO (SFOW) SUTRO RICHMOND (SFOE)	APC DVO CA35 STS HES O69 via: OAK SAU (SFOW) Or SFO SAU (SFOE)	J T P	↓ 100	Aircraft will exit NCT between SAU and REBAS assigned RV 300° (SFOW) & 320° (SFOE) ZOA control (SFOW) ZOA control RV (SFOE)
RICHMOND SUTRO	LIN, TIPRE, SYRAH, HRNER	J T	↑ FL190	ZOA control
RICHMOND SUTRO	SAC, ORRCA, MOGEE, HRNER			
RICHMOND	SUU CCR Southbound Departures			RV over CEDES
RICHMOND SUTRO	RBL, MACHU, BTG, HRNER			ZOA control
RICHMOND SUTRO Landing RNO	SIERA or TARVR STAR (direct HOBOA or TARVR approved)			
EXPO	RV 110 or FTHIL SID			ZOA control for vectors east or direct FRA
SFO OAK HWD PAO SQL NUQ RHV E16 (SFOE)	RBL, GRTFL OR DEDHD (non-oceanic aircraft only)	J		

Table 1-11. From Sector 41 to NCT east of ILA.

Destination	Route	ACFT	Altitude	Handoff To	Requirements
SMF	TUDOR STAR Direct	J T	↓ 120	ELKHORN	NCT control AOB FL230
		J T	↓ 090		
		P	↓ 070		
SAC MCC MHR LHM PVF GOO	Direct	J T	↓ 120 or level at lower filed altitude		
		P	↓ 090 or lower filed altitude		
BAB	Direct	J T P	↓ 090 or lower filed altitude		
	HI TACAN or HI ILS	J	Cleared for approach		

Table 1-12. From NCT to Sector 41 east of ILA.

From Airport/Sector	Route	ACFT	Altitude	Requirements
ELKHORN	Direct First Fix Outside NCT Airspace	J T P	↑ FL190 or lower filed altitude	ZOA control
	↓ CIC via direct		↓ 060 or lower filed altitude	

Table 1-13. From Sector 44 to NCT north of LIN.

Destination	Route	ACFT	Altitude	Handoff To	Requirements
SMF	SLMMR STAR (RNAV)	J T	Descend Via	ELKHORN	NCT control AOB FL190 for descent, speed, and turns of 30° or less
SUU	Direct PEELS SUU	J T	↓ 160		
BAB MCC MHR SAC	Direct	J T P	↓ 120		
MHR	AMRVR STAR (RNAV)	J	Descend via	EXPO	NCT control.
SFO (SFOW)	RISTI STAR or MOD CEDES	T P	@FL200 or lower filed altitude		
SFO (SFOE)	SAC V6 RYMAR				
OAK (SFOW) HWD	MOD SUNOL				
OAK (SFOE)	SAC V494 V87 REBAS				
CCR	SAC V6 REJOY	J T P			
SJC NUQ PAO RHV SQL E16	MOD BORED KLIDE	T			
	MOD BUSHY	P			
CXP MEV RTS	Direct	J T P	↓ 140		
RNO (RWY 17)	On or E of FMG163.FMG	J T	↓ 160		
		P	↓ 140		
	V392 FMG or TRUCK FMG	T P	↓ 130		
	ORRCA STAR (RNAV)	J DH8D	Descend via		
RNO (RWY 35)	TARVR STAR (RNAV)	J DH8D	Descend Via		
	SPOON KRNO		↓ 140		
	FMG (From south)	T P	↓ 140		
	V494 HUYJO FMG		↓ 130		

Table 1-14. From NCT to Sector 44 north of LIN.

From Airport/Sector		Route	ACFT	Altitude	Requirements
SMF		RVRCT / SCTWN or direct DOSCO	J T P	↑ FL190 or lower filed altitude	
Filed over MVA/OAL via DUDES		Direct MVA/OAL			
All others filed via DUDES		Direct DUDES			
BAB		Direct First Fix Outside NCT Airspace			
ELKHORN/EXPO	↓ RNO	ORRCA OR TARVR STAR (direct HOBOA or TARVR approved)	J T		ZOA control
ELKHORN	↓ RNO (RWY17)	TRUCK FMG	T P	AOA 110 ↑ 130	
EXPO	↓ RNO (RWY17)	SWR TRUCK FMG			
ELKHORN/EXPO	↓ RNO (RW35)	SWR V494 HUYJO FMG			
EXPO	↓ TVL or TRK		J T P		ZOA control for descent and turns of 30° left or right
NUGGET SILVER		On Route or First Fix on Route	J T P	↑ FL190 or lower filed altitude	

Table 1-15. From Sector 44 to NCT south of LIN.

Destination	Route	AC FT	Altitude	Handoff To	Requirements
SFO (SFOW)	DYAMD STAR (RNAV)	J	Descend Via	CEDAR	NCT control for vectors only west of LAANE
SFO (SFOE)	ALWYS STAR (RNAV)				
SFO (SFOW)(SFOE)	MOD STAR		↓ FL200		
SFO (DAR)	YOSEM STAR		Descend Via		NCT control for vectors only west of ZOMER
OAK (SFOW)	OAKES STAR (RNAV) (DO NOT USE FOR OAKE)		Descend Via	SUNOL	
OAK (SFOE)	BANND STAR (RNAV) (DO NOT USE FOR OAKE)		Descend Via		
OAK (SFOW)(OAKE)	SHARR STAR (RNAV)		↓ FL200		
HWD	SHARR STAR (RNAV)		↓ FL200		
SUU	DUCKE LIN OAKEY		↓ FL200	EXPO	
	BMBER STAR (RNAV)			SUNOL	Control Speeds only

Table 1-15 (continued). From Sector 44 to NCT south of LIN.

Destination	Route	ACFT	Altitude	Handoff To	Requirements
BAB MCC MHR SAC	LIN Direct	J	↓ FL200	SUNOL	NCT control for RV right and speeds North of TURLO AOB FL230 A/C must be East of a TURLO-LIN line
APC DVO STS O69 HES CA35 (SFOW)	MOD OAK SAU [direct OAK approved if S of MOD]		↓ FL200	SUTRO	Descending over Bay arrivals
APC DVO STS O69 HES CA35	MOD SFO SAU				

Table 1-16. From Sector 44 to NCT north of FMG.

Destination	Route	ACFT	Altitude	Handoff To	Requirements
RNO (RWY17)	LIBGE FMG or FMG	J T P	↓ 140		
	ANAHO STAR	J T			
	HARTT STAR (RNAV) or MYBAD STAR (RNAV)	J DH8D	Descend Via		
RNO (RWY35)	FMG	J T P	↓ 140		
	EELZA STAR (RNAV) or WADOL STAR (RNAV)	J DH8D	Descend Via		
CXP MEV RTS	Direct	J T P	↓ 140		

Table 1-17. From NCT to Sector 44 north of FMG.

From Airport/Sector	Route	ACFT	Altitude	Requirements
NUGGET SILVER	On Route or Direct first fix clear of NFL RATCF	J	↑ FL190 or lower filed altitude	
	Vectored to join assigned route prior to exiting NCT airspace	T P		

Table 1-18. From Sector 44 to NCT southeast of FMG.

Destination	Route	ACFT	Altitude	Handoff To	Requirements
RNO (RWY17)	FMG	P	↓ 140		
		J T	↓ 160		
	RYANN STAR or J92 FMG				
	SCOLA STAR (RNAV)	J DH8D	Descend Via		
RNO (RWY35)	FMG	P	↓ 140		

CXP MEV RTS	Direct	J T P	↓ 140		

Table 1-19. From NCT to Sector 44 southeast of FMG.

From Airport/Sector	Route	ACFT	Altitude	Requirements
NUGGET SILVER	On Route or Direct first fix outside NCT airspace clear of NFL RATCF and no further east than YERIN or LIDAT	J	↑ FL190 or lower filed altitude	
	Vectored to join assigned route prior to exiting NCT airspace	T P		

Attachment 4 List of Changes

Change	Date	Description	Author
--	15SEP2016	Initial Release	ZOA FAB
CHG01	03APR2018	Rewrite for new sectors	ZOA FAB
CHG02	28JUL2018	Addition of BRIXX, Flight Data, Various route changes	ZOA FAB
CHG03	15JUL2021	Rewrite for ZOA update	ZOA FAB
CHG04	03NOV2022	Updated for new RNO procedures and runway number change	ZOA FAB