



# Red Eagles



# 4477<sup>th</sup> Test & Evaluation Squadron (TES)

## Project CONSTANT PEG

4 August 2022



# Overview

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- CONSTANT PEG History
- Training Areas/Tonopah Airfield
- MiG Pilot Training
- Training Sequence of Events
- Day-to-Day Operations
- Maintenance
- Class A Mishaps/Summary
- Challenges
- Lessons Learned
- Return on Investment



# CONSTANT PEG History

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- Air War in Vietnam set the stage
  - USAF formations and tactics were ineffective against MiGs
  - AF lacked realistic dissimilar air-to-air combat training
  - USAF philosophy: No need to train for dogfight (AIM-7/AIM 9)
  - No air-to-air gun on early F-4s
- F-4Es trained against MiG-17s prior to going to Vietnam-1972
  - Major Randy O'Neil and Major Gail Peck chosen to fly MiG-17
  - MG Vandenberg: Continue program—testing vs training mindset
  - Spawned building block approach to new formations and tactics
- 64<sup>th</sup> Aggressor Squadron formed in 1972 at Nellis AFB
  - Initially flew T-38s; transitioned to F-5E in 1975—emulated MiG-21
  - Major O'Neil was 1<sup>st</sup> DO; Major Peck to HQ AF as Tactics Officer
  - Included GCI controllers from Day 1—Soviet Doctrine
  - T-38 Aggressors decimated Blue Force—validated concept



# CONSTANT PEG History (cont'd)

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- The Proposal (1976 timeframe)
  - MG Vandenberg (AF Director of Ops & Readiness)
    - “Get me that program or get me out of it”
  - Major Peck—Why don’t we build our own airfield?
  - Tactical Air Command/DO—MG Gabriel on board
- The Deal
  - BG Chuck Donnelly (AF Deputy Director of Plans)
    - “Figure out how to build an airfield, I’ll get you MiGs”
- The Go-Ahead Order from MG Vandenberg
  - Sir, What is your Call Sign? “Constant”
  - “Peg” was wife of Major Gail Peck



# CONSTANT PEG History (cont'd)

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- The Challenge: We want an airfield to secretly fly MiG jet fighters as training adversaries
- AF needed secure home for Stealth Fighter (F-117)
  - We can fly MiGs by day and F-117s at night
- Tap into SECDEF's Emergency MILCON fund
  - Required SECDEF approval
  - \$10M dollars available, MIPR money to DOE
  - DOE was sole source contract authority
- Glenn "Pappy" Frick selected as first Commander



# CONSTANT PEG History (cont'd)

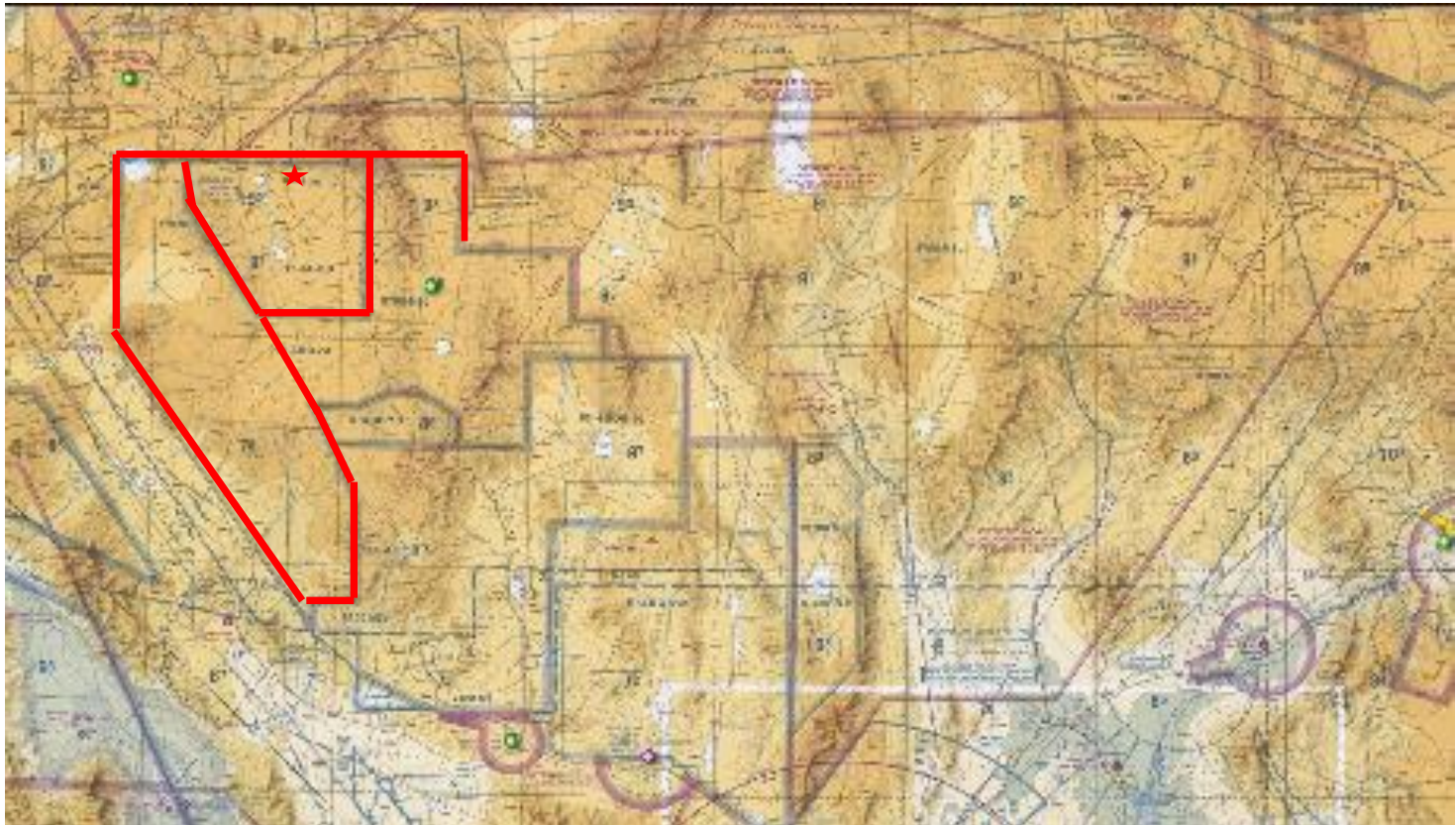
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- Tonopah, NV selected due to close proximity to NTTR, Nellis-Weapons School, NAS Fallon (Top Gun)
  - Major Peck sketched out original compound on napkin
  - Staffed through TAC, Air Staff, OSD, Congress
  - Joint pilot manning with Navy and USMC
- Designated as 4477 TEF (lower profile as a flight)
- Lt Col Peck was first Commander at Tonopah
  - All pilots checked out in Cessna 404 (leased three)
  - Flight operations began in July 1979
  - SMSgt Bobby Ellis handpicked as Chief of Maintenance



# Training Areas



**1979-1988—top US military pilots honed dogfighting skills against secretly acquired Soviet-era MiG aircraft in the Nevada desert under the code name CONSTANT PEG**



# The Early Years







# F-117 Moves to Tonopah

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**As Red Eagle ramp matured, a few miles away, a Man Camp was established which included a dining hall, Olympic size stainless steel pool, bowling alleys, sports field, billeting, and Club**



# Tonopah Airfield Today





# MiG Pilot Training

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- Pilots had to write the flight manuals, checklists, Bold Face
  - Pilots were all former Aggressor, Weapons School, Top Gun IPs
  - Most were Majors/LCDRs, few Captains, 2-3K hours of fighter time
- No two-seaters or simulators
  - Ground training consisted of MiG cockpit fam/Bold Face procedures
  - New pilots checked out in T-38 first, then one MiG type at a time
  - MiG check out included one low/high speed taxi; then first flight
  - First flight included performance profile; handling characteristics
  - IPs flew T-38 as chase on all MiG check rides/familiarization flights
  - 2xMiG-17, 6xMiG-21s initially; last MiG-17 flight in 1982 (accident)
  - 17xMiG-21s and 10xMiG-23s at height of program (1985)
  - MiGs flew during the day only
  - Pilots checked out in MiG-23 after MiG-17/21; not all flew MiG-23



# Training Sequence of Events

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- Mission: Train USAF, USN, USMC Fighter Pilots & Weapon Systems Officers, in air combat tactics against these foreign aircraft
- Visiting aircrew fly into Nellis on Sun—read-in and briefed
- Fly for one week; takeoff from and return to Nellis AFB each day
  - Debriefs over phone and face-to-face at Nellis
- "Bandit Control"—Ground Control Intercept (GCI)
  - Provided Close and Regimental Control—Soviet Doctrine
  - Controlled Blue Force as well
  - Knock It Off call after 180 degrees of turn, join up
  - GCI maintained currency as Instructor Aggressor Controllers
- Crawl-Walk-Run approach
  - Performance Profile
  - Simple gun track from an offensive position
  - Offensive/Defensive BFM set-ups
  - Multiship Engagement



# MiG-21 "Cleared For Takeoff"

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# Flight of Five T-38s





# MiG-21 "Lizard"





# MiG-21 Fishbed





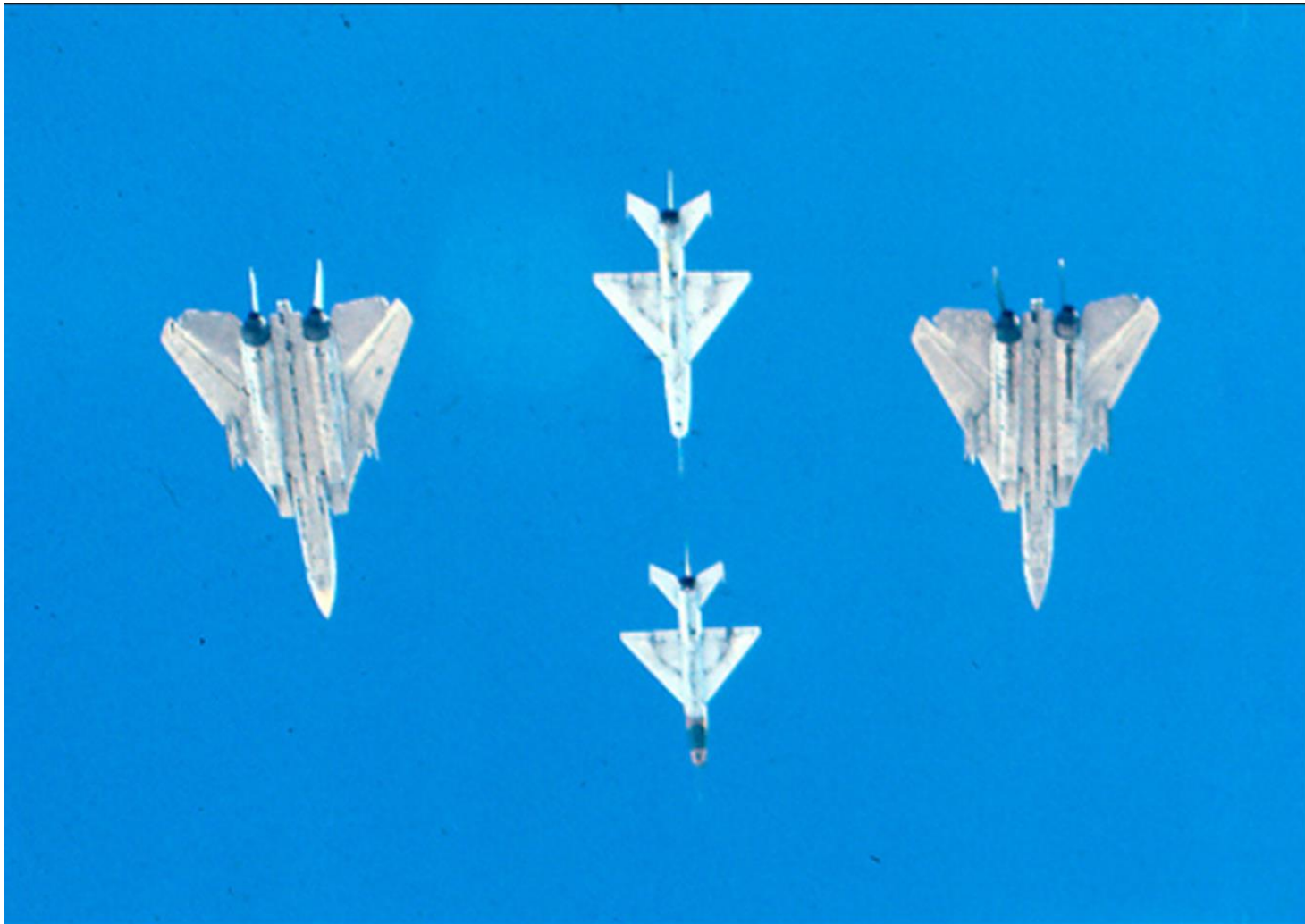


# MiG-21 At the Merge





# Tomcats and Fishbeds





# Eagle and Flogger





# MiG-23 Flogger E over Tonopah





# MiG-23 Flogger E (Interceptor)





# MiG-21s on the Hunt





# Desert Paint Scheme

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# High Canopy Rail







# Speed Brakes Out





# Lots of Switches





# Outstanding Maintenance

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- Transformed MiGs into flyable aircraft
- Handpicked from Weapons School, Aggressors, Thunderbirds
- Initially wore civilian clothes to fit in with locals at Tonopah
- SMSgt Bobby Ellis was expert in MiG maintenance
  - Grew the maintenance force to 210 personnel (all skill sets)
- Limited spare parts and hard to obtain
  - Maintenance had to fabricate parts and “red ball” other aircraft
  - Canopies were refurbished from a civilian contractor
  - Owned Kenworth 18 Wheeler (Big Red) to scavenge parts
- MiG-23 was a maintenance nightmare
- Maintainers given incentive rides in T-38



# MiG Starting Carts

## (Ivan and Natasha)

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**Maintainers were the life blood of the program!**



# MiG-21 with Training Missiles

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# MiG-21 Flagship





# Class A Mishaps



Date	Aircraft	Event	Result
23 Aug 79	MiG-17	Loss of Control	Fatal
8 Apr 82	MiG-17	Engine Failure/Fire	No Injury (crash landing)
21 Oct 82	MiG-23	In-Flight Fire	Fatal
15 Feb 84	T-38	Hangar Mishap (Fuel Cell)	Fatal
25 Jun 87	MiG-21	Engine Failure	Ejection
28 Aug 87	MiG-23	Loss of Control	Ejection



# Constant Peg Summary



*Red Eagles flew/maintained the MiG-17, MiG-21, and MiG-23 between 1979-1988*

FY	79	80	81	82	83	84	85	86	87	88
MiG-17	2	2	3	0	0	0	0	0	0	0
MiG-21	6	6	6	8	9	15	17	14	14	14
MiG-23	0	0	1	3	6	9	10	10	10	9
Total Aircraft	8	8	10	11	15	24	27	24	24	23
Sorties	87	1015	1340	1055	1198	2099	1779	2792	2793	1342
Exposures	68	372	462	575	666	800	688	982	905	412
<b>Total Sorties</b>										<b>15500</b>
<b>Total Exposures</b>										<b>5930</b>





# Challenges

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- Unknown Engine life
- Spare parts
- Ejection Seats
- Birds
- Security
- Home Life
- Funding





# Lessons Learned—According to Participants

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- Overcome BUCK FEVER
- Learn how to visually acquire small fighters
- Never slow down
- Use the vertical to counter the hard turn
- Avoid a prolonged turning fight



# Return on Investment

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- Prop and Machine Gun Wars
  - WWI/WWII air-to-air kill ratio—1.74:1-<sup>\*</sup>4:1
  - Korean War air-to-air kill ratio—<sup>\*</sup>6:1
- Fighters, missiles and guns
  - Vietnam air-to-air kill ratio—<sup>\*</sup>1.85:1
  - DESERT STORM—No AF losses—<sup>\*</sup>35:0
- F-15C Worldwide Kill Ratio—106:0
- F-16 Worldwide Kill Ratio—70:0

<sup>\*</sup>Air Force Magazine, Aug 2012, p.47



# Two MiG-21 Kills





# MiG-17 at Threat Training Facility





# MiG-23 at Threat Training Facility





# MiG-21 at Air Armament Museum

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Gail Peck, AKA "Evil", with number 85 (old 14) at USAF Armament Museum outside Eglin AFB, FL in Mar 09. She looks good on static display but she looked better with the wheels up and locked while climbing out at Mach 1.



# 64<sup>th</sup> Aggressor Squadron Nellis AFB







# 65<sup>th</sup> Aggressor Squadron Nellis AFB

(Reactivated on June 9<sup>th</sup>, 2022)





# 18<sup>th</sup> Aggressor Squadron Eielson AFB





# Commercial "Red Air" Super Albatros L-159Es

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# MiG-29 Fulcrum





# Su-27/30 Flanker





# Su-33 Flanker D





# Su-35 Flanker E





# Su-57 Felon (5<sup>th</sup> Generation Fighter)

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# Su-57 Felon





# J-20 Mighty Dragon (5<sup>th</sup> Generation Fighter)

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# J-20 Mighty Dragon





# Full-Spectrum Aggressors

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- Fighters
- SAMs
- Space
  - 527 SAS (Schriever AFB)
- Cyberspace
  - 57 IAS (Nellis AFB)
  - 177 IAS (McConnell AFB-ANG)





# Questions??





# Backup Slides





# Tonopah Test Range Airfield (Silverbow Tower)

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1977



1988



# Col (Ret.) Gail "Evil" Peck Jr.

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# 45<sup>th</sup> Aggressor Reunion





# Red Eagles Memorial (USAF National Museum)

