



**Flight Evaluation of the Communications
Earplug in the OH-58D Helicopter**

Part 2. Questionnaire Data

By

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19. ABSTRACT (Continue on reverse if necessary and identify by block number) Aviators assigned to OH-58D helicopter operational units participated in an expanded field assessment of the communications earplug (CEP). The CEP is a low cost and simple approach that is readily available for immediate fielding. During FY97, Project Manager-Aircrew Integrated Systems (PM-ACIS) purchased enough CEPs to outfit all aviators currently assigned to OH-58D operational units. The objective of the study was to form a large sample of users for evaluating the effectiveness of the current CEP configuration in solving hearing protection and communication problems in the OH-58D helicopter. The CEP performs well during daily missions and is considered a viable solution to the problem of inadequate speech clarity and understanding in the Kiowa Warrior helicopter. Part 1 of this report, published separately, presents the method and assessment findings of the study. Part 2, the present report, contains the dataset to allow close inspection of individual subject responses.			
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Preface

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Background to the questionnaire data set

During FY 97, the Project Manager, Aircrew Integrated Systems (PM-ACIS) purchased enough Communications Earplugs (CEPs) to outfit all aviators currently assigned to OH-58D operational units. The CEPs were installed in HGU-56/P aviator helmets under the direction of PM-ACIS, with assistance provided by the U.S. Army Aeromedical Research Laboratory (USAARL). The acceptability of the CEP was assessed by asking aviators to compare the CEP helmet combination (Figure 1) with the helmet systems currently used in the OH-58D helicopter.

A novel questionnaire was constructed for this study (Appendix). The questionnaire consists of eight general sections: personal data, personal hearing protection, fitting, comfort, donning and doffing, speech clarity/understanding, noise reduction/attenuation, and general issues.

Part 1 of this report contains the details of the methods, analysis, and results of this survey research (Murphy and Mozo, 1999). This publication, Part 2, contains the data tables necessary to allow close inspection of individual subject responses

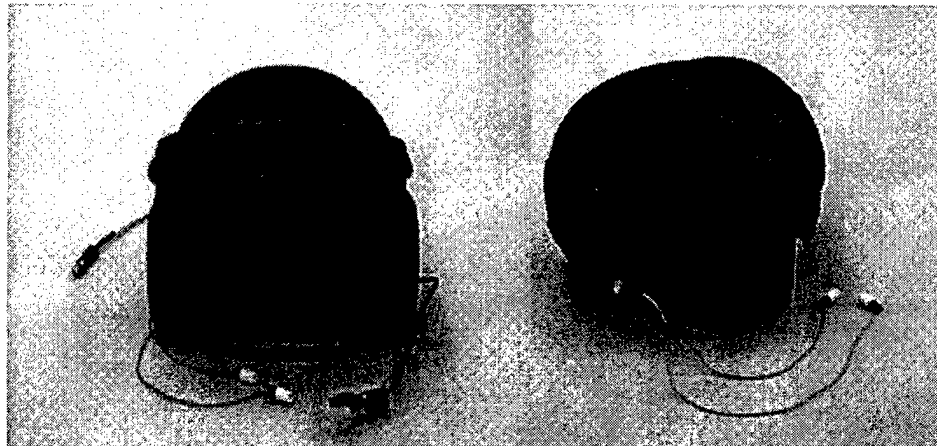


Figure 1. CEP integrated into HGU-56/P aviator helmet.

CEP Flight Evaluation in the OH-58D Helicopter

Q1	Q3	Q4	Q5	Q6	Q6a	Q7	Q8	
Unit location	ID	Gender	Aviator Experience	Flight hours using HGU-56	Flight hours using CEP	CEP still functioning	Tip size	Seat position
Num	Years	Flight Hours	Flight hours using HGU-56	Flight hours using CEP	CEP still functioning	Tip size	Seat position	
1	M	7	1000	300	1	short	Right	
2	M	3	420	120	1	std	Right	
3	M	10	2200	600	0	std	Right	
4	M	6	1700	300	1	std	Right	
5	M	3	600	50	1	short	Both	
6	M	3	600	400	1	std	Both	
7	M	4	1000	300	1	short	Left and right	
8	M	7	500	65	1	std	Left	
9	M	2	500	250	1	std	Left	
10	M			100	0	std	Right	
11	M	4	500	350	1	std	Right	
12	M	8	1500	300	1	Combo	Left and right	
13	M	2	440	240	1	std	Left and right	
14	M	3	550	225	1	std	Right and left equal	
15	M	4	600	150	1	short	Right	
16	M	11	1500	150	1	short	Left	
17	M	7	1500	50	0	slim	Both	
18	M	3	640	200	0	std	Fixed	
19	M	2	365	120	1	std	Both	
20	M	4	700	695	0	std	Right/pilot	

1.

¹ For the Yes/No questions, "Yes"=1 and "No"=0

Q1 Unit location	Q1 ID Num	Q3 Gender	Q4 Aviator Years Flight Hours	Q5 Flight hours using HGU-56	Q6 Flight hours using CEP	Q6a CEP still functioning	Q7 Tip size	Q8 Seat position
1.	21	M	2	500	50	1	std	Left and right
	22	M	5	900	100	1	std	Right
	23	M	3	350	100	1	std	Both
2.	1	M	2	430	200	0	std	Left earplug separated at earplug housing from wire during NBC flight.
	2	M	4	750	300	1	std	Right
	3	M	4	530	400	1	std	Right
	4	M	3	500	120	1	std	Standard
	5	M	5	900	400	1	std	Split duties right and left.
	6	F	5	900	300	1	short	R/L
	7	M	6	1000	200	1	std	Right
	8	M	4	400	100	1	std	Left or right
	9	M	3	500	100	1	std	Right
	10	M	4	850	100	1	std	Both
	11	M	7	850	120	1	std	Left
	12	M	6	1200	300	0	std	Left
	13	M	10	2000	300	0	std	Left
	14	M	2	500	250	1	std	Left
	15	M	5	750	100	0	std	Both
	16	M	4	650	400	0	std	Right
	17	M	5	750	25	0	std	Right
	18	M	2	400	225	0	std	Right

Q1 Unit location	Q1 ID Num	Q3 Gender	Q4 Aviator Experience Years Flight Hours	Q5 Flight hours using HGU-56	Q6 Flight hours using CEP	Q6a CEP still functioning	Q7 Tip size	Q8 Seat position
2.	19	M	3 550	75		0 Wires broke away from ear piece	std	
	20	M	5 700	230	180	1	Combo	Right/left equal
3.	1	F	2 400	150	1	1	std	Left
	2	M	6 2300	150	100	1 After one repair of broken stem	std	R/L
	3	M	10 1600	400	300	1	std	Right
	4	M	4 500	150		1	slim	Left
	5	M	5 800	601		1	std	Right
	6	M	6 1200	200	200	1	slim	Right
	7	M	5 900	100	200	1	short	Right
	8	M	4 1200	70		0 The foam earplugs broke off after first use. ALSE repaired and it took about 5 more flight hours before they broke again	std	Right/left
	9	M	10 1500	200	200	1	std	Right
	10	M	2 500	50	250	1	std	Right/Left
	11	M	2 500	100	200	1	std	Right
	12	M	6 1250	250	15	1	std	N/A
	13	M	13 3300	400		0 Wire broke on one side where wire connects to plug itself.	std	Right
	14	M	2 650	200		1	std	Both left and right
	15	M	10 30	30	6	1	std	Upright
	16	M	10 2100	70	5	1	std	Right
	17	M	3 450	0	0	0 Bong and whistles are too damned loud	std	Right
4.	1	M	4 800			1	std	Right
	2	M	2 430	150	50	1	std	Upright

Q1 Unit location	Q1 ID Num	Q3 Gender	Q4 Aviator Experience Years Flight Hours	Q5 Flight hours using HGU-56	Q6 Flight hours using CEP	Q6a CEP still functioning	Q7 Tip size	Q8 Seat position	
4.	3	M	4 1200	40		1	std		
	4	M	5 1100	200		1	slim	Right	
	5	M	4 550	50		1	short	Left seat	
	6	M	4 670	100		1	slim	Both	
	7	M	9 1600		70	1		Right seat	
	8	M	5 1000	60	40	1	std	Yes	
	9	M	2 300	50		1	std	Left	
	5.	1	M	1 499	9		1	short	Left
		2	M	5 1000		200	1	std	Right
3		M	9 2300	250		1	std	Left	
4			1 250	240	10	1	std	Left	
5		M	2 400	20	10	1		Equally left and right	
6		M	5 670	15		1	std		
7		M	5 800	100		1	std	Left	
8		M	3 400	10	100	1	std	Left/right	
9		M	17 5000		30	1	std	Both	
10		M	2 400	20	20	1	std	Left and right equally	
11		M	3 400	6		1	short	Right	
12			9 2500	40	125	0	slim	Left	
									Left earplug intermittent, possibly due to wire breaking. ALSE issued me a new CEP.
13		M	4 590	40	6	1	std	Equal both seats.	
14		M	2 400	120	2	1		Right	
15		M	3 500	50	10	1	std	Right	
16	M	15 2500		10	1	std			

Q1 Unit location	Q1 ID Num	Q3 Gender	Q4 Aviator Experience Years Flight Hours	Q5 Flight hours using HGU-56	Q6 Flight hours using CEP	Q6a CEP still functioning	Q7 Tip size	Q8 Seat position
6.	1	M	6	1100	200	300	1 None	N/A
	2	M	9	2200	400	200	1 None	Right
	3	M	2	200	50		1	Left
	4	M	8	725	275	125	1	Left
	5	M	6	750			0 Earplug broke off at tip.	Left and right
	6	M	13	3100	150	150	1	Left
	7	M	5	1000	100		1	Both
	8	M	6	1400		100	1	Left and right
	9	M	6	1200	500		1	Left and right
	10	M	10	2100	600	4	1	Right
7.	1	F	4	500	100	50	1	Left/right
	2	M	5	1115			1	Left
	3	M	3	400	5	110	1	Right
	4	M	2	470	100		1	Both equally
	5	M	15	4000	500	200	1	OH-58D(I) has one seat position
	6	M	6	1000	800	200	1	Left and right
	7	M	10	1700	200		1	Either
	8	M	4	550	150		1	Both
	9	M	6	1400	200	150	0 Wires broke	Left
	10	M	7	1350	20		1	Left
	11	M	4	900	100	200	0 Broken wire, broken earplug tip	Left/right
	12	M	2	400	200		0 Broken wire and earplug tip.	Left/right
	13	M	8	2700	300	250	1	Either of the two front seats
	14	M	8	1200	150		1	OH-58D(I) the only position

Q1 Unit location	Q1 ID Num	Q3 Gender	Q4 Aviator Years	Q5 Experience Flight Hours	Q5 Flight hours using HGU-56	Q6 Flight hours using CEP	Q6a CEP still functioning	Q7 Tip size	Q8 Seat position	
7.	15	M	2	600	500		0 Wire keeps breaking from the foam earplug.	std	right	
	16	M	6	900	200	150	1	short	Both	
	17	M	6	1200			1	std	Both	
	18	M	4	550	400		1	std	Left	
	19	M	8	850	150	200	1	std	Left	
	20	M	8	1400	1	200	1	std	Left/right	
	21	M	15	3200	50	100	1	std	Equal	
	22	M	6	1200	200	150		std	Right	
	23	M	6	900	12		1	std	Left	
	8.	1	M	30	10500		250	1	slim	Left and right
		2	M	8	2400		400	1	std	Left
		3	M	10	2200		200	1	short	Equally left and right
		4	M	14	4500	300	50	1		Pilot or copilot
		5	M	10	2700	6		1	std	Left
		6	M	18						
		7	M	9	2700	2300			std	Seat does not move
		8	M	16	4000		250	1	short	Both pilot and copilot
		9	M	16	4500		50	1	std	Left seat
		10	M	7	1800		20	1		Equal
		11	M	8	2500		200	1	std	Left
		12	M	15	4500		200	1	std	Left and right
		13	M	6	1000			1	slim	Both
		14	M	17	5000	-	50	1	short	Right and left
15		M	16	5400		20	1	std	Left	

Q1 Unit location	Q2 ID Num	Q3 Gender	Q4 Aviator Experience Years Flight Hours	Q5 Flight hours using HGU-56	Q6 Flight hours using CEP	Q6a CEP still functioning	Q7 Tip size	Q8 Seat position
8.	16	M	5	1300	300	1	slim	Left
	17	M	6	1700	20	1	std	Left and right
9.	1	M	3	500	50	1	slim	L/R
	2	M	7	1200	100	1	std	Right seat
	3	M	19	3400	25	0	std	Left
	4	M	3	500	200	1	slim	Both
	5	M	4	600	250	1	std	Right
	6	M	3	570	70	1	std	Both
	7	M	15	4100	400	1	std	Both
	8	M	6	1000	50	1	short	Left
	9	M	3	350	4	1	std	Left
	10	M	12	3000	50	1	std	Both
	11	M	11	1800	10	1	std	Right
	12	M	15	1300	10	1	std	Fixed
	13	M	5	500	50	1	short	Even split L/R
	14	M	4	800	50	1	short	Right
	15	M	4	600	10	1	slim	Left
	16	M	3	500	10	1	short	Left
10.	1	M	5	750	150	1	std	Right and left

Overall Total M = 146 Sum 963.5 Avg 205.3 Avg 129.4 Yes = 126
F = 3 Avg 6.4 Avg 1347.4 N = 23
NR = 3 NR = 3
N = 152

Q1 Unit location	Q1 ID Num	Q9 Waiver or IO letter	Q10 Fly with spectacle	Q11 Spectacle type	Q11 Wear earplugs with helmet	Q12 Discomfort w/earplugs - onset and description	Q13 Discomfort w/ helmet - onset and description
1.	1	0	0		1	Lack of ICS volume	0
	2	0	0		1	2-3 hours, combined w/hearing difficulty	1 3-4 hours Hot spots, headaches
	3	0	0		1	Pain	0
	4	0	0		1		0
	5	0	0		1		0
	6	0	0		0		0
	7	0	0		1		0
	8	0	1	Bayonet	1		0
	9	0	0		1		0
	10	0	0		1		0
	11	0	0		1	Only until I break them in	0
	12	0	0		1		0
	13	0	0		1		0
	14	0	0		1		0
	15	0	0		0	Pain in the ear canal	0
	16	0	0		0		0
	17	0	0		0	dull pain, continuous after a few days flying	0
	18	0	0		1		1 30 minutes Sometimes just slight discomfort from the size of the speaker; other times it felt as though the plastic portion of the plug was contacting my ear canal.
	19	0	0		1		0
	20	0	0		1	2 hours Itching, sweating	0

Q1 Unit location	Q1 ID Num	Q9 Waiver or IO letter	Q10 Fly with spectacle	Q11 Spectacle type	Q11 Wear earplugs with helmet	Q12 Discomfort w/earplugs - onset and description	Q13 Discomfort w/ helmet - onset and description
1.	21	0	0		1	0	0
	22	0	0		1	0	0
	23	0	0		1	0	0
2.	1	0	1	Wire frames	1	0	0
	2	0	0		1	1	0
	3	0	0		1	Itchiness	0
	4	0	0		0	0	0
	5	0	0		0	0	0
	6	0	0		1	3-4 hours	0
	7	0	0	Sunglasses during the day	1	0	Itchiness, pain
	8	0	1	Cable	1	0	0
	9	0	0		1	0	0
	10	0	0		1	0	2.5-3.0 hrs under NVG only
	11	0	0		1	0	Hot spot
	12	0	0		1	0	Hot spots
	13	0	0		0	0	0
	14	0	0		1	0	0
	15	0	0	0	1	2-3 hours	Hot spot on top of head. Bottom of earcups chafe neck
	16	0	0		1	0	0
	17	0	0		1	0	45 minutes
	18	0	0		1	0	Hot spots

Q1 Unit location	Q1 ID Num	Q9 Waiver or IO letter	Q10 Fly with spectacle	Q11 Spectacle type	Q11 Wear earplugs with helmet	Q12 Discomfort w/earplugs - onset and description	Q13 Discomfort w/ helmet - onset and description
2.	19	0	0		1	0	1 Beginning to end Pain inside ear opening
	20	0	0		1	0	1 1-2 hours with NVGs, 3-4 hours w/o NVGs Hot spot top of my head
3.	1	0	0		1	1	30 minutes hotspots
	2	0	1	Bayonet	1	0	0
	3	0	0		1	0	0
	4	0	0		1	1	0
	5	0	0		0	0	0
	6	0	0		1	0	0
	7	0	0		1	0	1 2 hours hotspots usually associated with NVGs
	8	0	0		1	0	0
	9	0	0		1	0	0
	10	0	0		1	0	0
	11	0	0		1	0	1 2 hours hotspot
	12	0	0		0	0	0
	13	0	0		1	0	0
	14	0	0		1	0	0
	15	0	0		1	0	0
	16	0	1		1	0	0
	17	0	0		1	0	0
4.	1	0	0		1	1	0 15-20 minutes if not immediately. The plastic core presses into the ear when the cup is placed over it.

Q1 Unit location	Q1 ID Num	Q9 Waiver or IO letter	Q10 Fly with spectacle	Q11 Spectacle type	Q11 Wear earplugs with helmet	Q12 Discomfort w/earplugs - onset and description	Q13 Discomfort w/ helmet - onset and description
4.	2	0	0		1	Varies	Itchiness, uncomfortable, slipping
	3	0	0				0
	4	0	0		1		0
	5	0	1	Bayonet temples, wire frames.	1	About 3 hours	Pain in upper ear. 0
	6	0	0		1	Varies from 15 minutes to 1 hour.	15 minutes Itchiness with a lot of discomfort. Hot spot on forehead.
	7	1	0		0		0
	8	0	0		1		Hot spots, headache
	9	0	0		1		Hot spots
5.	1	0	0		1		0
	2	0	0		1		0
	3	0	0		0		0
	4	0	0		1		Headaches (noise)
	5	0	0		1		0
	6	0	0		1		1
	7	0	0		1	As soon as I put them in.	30 minutes Hot spot on top of helmet.
	8	0	0		0		0
	9	1	0		1	After a couple of adjustments I could fix the discomfort.	Pain
	8	0	0		0		1
	9	1	0		1		Hot spots on forehead, headaches.

Q1 Unit location	Q1 ID	Q9 Waiver or IO letter	Q10 Fly with spectacle	Spectacle type	Q11 Wear earplugs with helmet	Q12 Discomfort w/earplugs - onset and description	Q13 Discomfort w/ helmet - onset and description	
5.	10	0	0		1	0		
	11	0	0		1	0		
	12	0	0		1	1		
	13	0	0		1	0	Itchiness	
	14	0	0		0	0	Hot spots	
	15	0	0		1	0	3 hours	
	16	0	0		1	0	Hot spots	
	6.	1	0	0		0	0	
		2	0	1	Strap	0	0	
		3	0	0		1	1	2 hours
		4	0	0		1	0	Head itches.
		5	0	1		1	0	Dull pain. Some itchiness.
		6	0	0		1	0	
		7	0	0		1	0	
		8	0	0		1	0	
		9	0	0		1	0	
10		0	0		1	0		
7.	1	0	0		0	0		
	2	0	0		1	0		
	3	0	0		1	0		
	4	0	0		1	0	30 minutes	
	5	0	1	Comfort cables (wrap around)	0	1	hot spots	
	6	0	0		1	0		

Q1 Unit location	Q1 ID Num	Q9 Waiver or IO letter	Q10 Fly with spectacle	Q10 Spectacle type	Q11 Wear earplugs with helmet	Q12 Discomfort w/earplugs - onset and description	Q13 Discomfort w/ helmet - onset and description
7.	7	1	In process	1	Bayonet	1	After 1.5 hours Hot spot
	8	0	0	0	0	0	0
	9	0	0	0	1	0	0
	10	0	0	0	0	0	0
	11	0	0	0	0	0	0
	12	0	0	0	1	0	0
	13	0	0	0	1	0	0
	14	0	1	1	Wire	0	0
	15	0	0	0	0	0	0
	16	0	0	0	1	0	0
	17	0	0	0	0	1	2 hours Itching
	18	0	1	1	0	0	1 1 hour
	19	0	0	0	1	0	0
	20	0	1	1	Wire frame Ray-Ban sunglasses	0	0
	21	0	0	0	1	0	0
	22	0	0	0	1	0	1/2 hour Hot spots and headache. Just don't like that style helmet. Too big and bulky. Could not hear!
8.	23	0	0	0	1	0	1 1 minute
	1	1	16 years	1	Bayonet temples	0	0
	2	0	0	0	1	0	0
	3	0	0	0	1	0	0
	4	0	0	0	1	1 Within 45 minutes Poking pain	0

Q1 Unit location	Q1 ID Num	Q9 Waiver or IO letter	Q10 Fly with spectacle	Q11 Spectacle type	Q11 Wear earplugs with helmet	Q12 Discomfort w/earplugs - onset and description	Q13 Discomfort w/ helmet - onset and description	
8.	5	0	0		1	About 30 minutes	0	
	6	0	0		1		0	
	7	0	0		0		0	
	8	0	0		1		0	
	9	0	0		1		1	
	10	0	0		1		0	
	11	1	2 years	0	0		0	
	12	0	0	0	1		0	
	13	0	0	0	1	2-3 hours	0	
	14	0	0	0	1	pain	0	
	15	0	0	0	0	5-10 minutes	0	
	16	0	0	0		1	Pain in ear canal. Full feeling in my head.	0
	17	0	0	1	Wire frames	1		0
	9.	1	0	0		1		0
		2	0	0		1		0
3		1	8 years	0	1		0	
4		0	0	1	Wrap around		0	
5		0	0	0	1		0	
6		0	0	0	1		0	
7		0	0	0	1		0	
8		0	0	0	1		0	
9		0	0	0	1		0	
						1 hour	Hot spots	

Q1 Unit location	Q1 ID Num	Q9 Waiver or IO letter	Q10 Fly with spectacle	Q10 Spectacle type	Q11 Wear earplugs with helmet	Q12 Discomfort w/earplugs - onset and description	Q13 Discomfort w/ helmet - onset and description
9.	10	0	1	Wire frames	0	0	0
	11	0	0		0	0	0
	12	1	0		1	Itching pain	1
	13	0	0		1		45 minutes
	14	0	0		1	Hot spots	0
	15	0	0		1		0
	16	0	0		1		0
10.	1	0	0		1		0

Overall Total N = 152 Yes = 7 N = 145 NR = 0
Yes = 17 N = 135 NR = 0
Yes = 121 N = 29 NR = 2
Yes = 26 N = 110 NR = 16
Yes = 27 N = 120 NR = 5

Q1 Unit location	Q1 ID	Q14 Difficulty in fitting CEP Num	Q15 Discomfort inserting CEP	Q16 Wires pull on CEP when turning head	Q17 CEP move in/out of ear during flight
1.					
	1	0	0	0	1
	2	0	0	0	1
	3	0	0	1	1
	4	0	0	1	0
	5	1	0	0	0
	6	1	0	1	1
	7	0	1	1	1
	8	1	1	1	1
	9	0	0	1	1
	10	0	1	1	1
	11	0	0	1	0
	12	1	1	0	0
	13	0	1	1	1
	14	0	0	0	0
	15	0	1	1	1

Occasionally slips out of ear
Sometimes w/ excessive head movement
Backs out of ear canal if not fully seated.

Small Velcro piece becomes detached, hangs free and sways.
They will get caught on anything from shoulder harnesses to flight suit collars

After washing them they lose their ability to stay crimped during insertion.
After repeated use they are difficult to slide in ears - not impossible though.

The hard post rubs inside of ear.
There is not as much cushion as with the yellow foam ear plugs.

Housing creates a hard object which can press against the outer ear.

Earplugs too large initially
Plastic screw too long

Occasionally

from the wire pulling on the earplug during flight

Q1 Unit location	Q1 ID	Q14 Difficultly in fitting CEP Num	Q15 Discomfort inserting CEP	Q16 Wires pull on CEP when turning head	Q17 CEP move in/out of ear during flight
1.					
	16	1	Size adjustment. Needed short	0	0
	17	0		1	tangled around other wires or caught on something
	18	0		1	They tend to catch under my collar
	19	0	Blunt sharp edges on the CEP hurts ear canal	1	They snag on helmet or on flight suit and usually pull out of ear
	20	0		1	With the neck cord from the NVGs it sometimes pulls on the CEP cords
	21	1	Standard is too fat - slim is too slim	0	
	22	0	Plastic is hard - after 4-5 days of continuous use, ear canal is sensitive	0	
	23	0		0	
2.	1	0		1	Sometimes the wires get tangled with either the NVG battery pack, ODA, or even the seat belt taking a lot of the slack out.
	2	0		0	
	3	0		1	Occasionally
	4	0		1	
	5	0		1	Gets caught on the back of the vest especially during NVG flight when the wire won't stay Velcro.
	6	0		0	
	7	0		1	Only while wearing NVGs and weight bag
	8	0		0	
	9	0		0	
	10	0		1	Occasionally, especially when wearing NVGs with the attached lanyard

Q1 Unit location	Q1 ID	Q14 Difficulty in fitting CEP Num	Q15 Discomfort inserting CEP	Q16 Wires pull on CEP when turning head	Q17 CEP move in/out of ear during flight
2.	11	0	0	1	1
				We mount so much stuff on our head, the wires get intermixed	Once the foam inserts wear
	12	0	0	1	0
				Sometimes it catches on the other lanyards and wire connections I.e. NVGs, ODA, ICS cable.	
	13	0	1	1	1
				Until I get used to the feel of the plug	Because short wire pulled loose
	14	0	0	1	1
				If I do not remember to keep the cord off my neck and over the survival vest it catches. A fix, create loop or Velcro hold to keep cord on helmet	If not inserted fully or hastily and the cord pulls - it comes out
	15	0	1	1	1
				In the beginning the edges might catch my ear and after a while some mild aching inside the ear	Only infrequently did one slip out
	16	0	0	1	0
				Sometimes when flying NVGs, while turning head CEP would get pulled out	
	17	0	0	1	1
				Not often. If it catches on my shirt	It has. Installed in a hurry
	18	1	1	1	1
				After wearing the CEP for more than 20 minutes the foam tip would not stay compressed for reinsertion back into the ear. Heat and moisture would prevent this	At times the foam tip would back out of the ear canal
	19	1	1	1	1
				Will not stay in ear	At least slips out once on each flight
	20	1	0	0	1
				Finding correct size foam insert and the diameter of the CEP itself	Occasionally
3.	1	0	0	1	0
	2	0	0	0	0

Q1 Unit location	Q1 ID	Q14 Difficulty in fitting CEP Num	Q15 Discomfort inserting CEP	Q16 Wires pull on CEP when turning	Q17 CEP move in/out of ear during flight
3.	3	0	0	1	1
				When Velcro catches on battery pack on helmet or other places such as vest	See #16
	4	0	0	1	1
				Well when turning head to left wires are pulled	See #16
	5	0	0	1	1
				Some times because of the limited space within the A/C	Sometimes when 'live fire' of weapons
	6	0	1	1	0
			The plastic housing hurt my earlobe during the first few weeks. I repositioned by turning and now I can fly 4 hours or so without discomfort	Only under NVG flying when I put the CEP in prior to putting on the NVG	
	7	0	1	0	0
			Occasionally I fell the hard portion of inner core against eardrum when I insert in earcanal		
	8	0	0	1	1
				They get hung up on other things attached to my helmet	See 16
	9	0	0	0	0
	10	0	0	1	0
				Head turns more than 60 degrees left or right it often snags.	
	11	0	0	1	1
				Occasionally pull plugs out of ear	Occasionally pulled out of place
	12	0	0	1	1
				Loose wire snags on things especially while wearing NVGs	
	13	0	0	1	0
				Sometimes while turning head	
	14	0	0	1	0
				If the wires are not positioned directly behind my head, the wires get tangled	
	15	0	1	1	0
			The plastic center rubs the ear canal and is very uncomfortable	Wires too long and catch on ICS cord and other items such as survival vest	
	16	0	0	1	0
	17	1	0	1	1
		When putting helmet on CEP would move and cause discomfort			When putting helmet on

Q1 Unit location	Q1 ID	Q14 Difficulty in fitting CEP Num	Q15 Discomfort inserting CEP	Q16 Wires pull on CEP when turning head	Q17 CEP move in/out of ear during flight		
4.	1	1	1 It goes - but intermittently it slides out and I have to continuously readjust the earplug throughout the	1 The plastic core.	0 They slide out during any rapid head movements.	0	
	2	0	0	1 Pressing earplugs is sometimes painful	1 Too short	1 Wires to short	
	3	1	1 Difficult to fully put CEP in. Often the wires catch on NVG goggle cord/power supply cord.	1	1 Sometimes. See #14	1 Cord catches on other wire harnesses, etc.	
	4	1	1 Too big	1	1	1	
	5	0	0	0	0	1	1 Once in awhile they slip out when I adjust my helmet.
	6	1	1 The first set was too big.	1 They poke the sides of my ears.	1	1	1 Sweat works it out.
	7	0	0	0	1	0	0
	8	0	0	0	1	1	1
	9	0	0	1 Too deep	1	1	1 Not too bad
	10	0	0	0	1	1	1 Fall out
5.	1	0	0	1	1	1 I use the "shorts" which tend to pull out easily	
	2	0	1 Until I got used to the plugs, they scraped your ear when putting them in.	0	0	0	
	3	1	1 Difficult to put helmet on without moving ear plugs.	1 Have to push them in deep in ear so they don't come out when putting helmet on.	1	0	0
	4	0	0	1	1	0	0
	5	0	1 It's a little big for my ear canals.	1	1	0	0

Q1 Unit location	Q1 ID	Q14 Difficulty in fitting CEP Num	Q15 Discomfort inserting CEP	Q16 Wires pull on CEP when turning head	Q17 CEP move in/out of ear during flight
5.					
	6	0	0	1	0
				The CEP pulls due to wiring laying about the pilots shoulders/neck and coming into contact with other hardware - i.e. wires, seatbelt.	
	7	1	1	1	1
		Explained in #12	Explained in #12	Only sometimes. Out of 10 flights maybe three.	Same as #16.
	8	1	0	1	0
		The post is so large that slim/short foam tips cause discomfort resulting in use of the standard.		Minimal, due to extreme amount of plugs, wires, cables, vests and other misc. equipment jammed into a small cockpit.	
	9	1	0	1	0
		To long and a little stiff feeling inside the ear.		Gets caught in my vest behind the helmet.	
	10	0	0	1	0
				Only when it gets tangled with the communication plug-in. But if you plug into the aircraft last it doesn't cause a problem.	
	11	0	1	1	1
			After putting the helmet on, the CEP tends to slip and I have to readjust them.	They get caught in the harness straps or between my neck and collar.	Only once in a while when the wires get caught
	12	0	0	1	0
	13	0	0	0	1
				At times, not always.	Short wire sometimes. Why - unknown. I think it catches on the helmet or shoulder harness or something
	14	0	0	0	0
	15	0	0	1	0
	16	1	0	1	0
		They seem to be slightly too long, pressure from the ear cup causes slight discomfort to the outer ear.		Occasionally, not a big deal.	
6.					
	1	0	0	1	0
	2	0	0	0	0
	3	0	0	1	1
				With goggles and mic cord, the earplug cords get pulled.	Only sometimes.

Q1 Unit location	Q1 ID	Q14 Difficulty in fitting CEP Num	Q15 Discomfort inserting CEP	Q16 Wires pull on CEP when turning head	Q17 CEP move in/out of ear during flight	
6.	4	0	1 Occasionally the solid plastic portion will scrape ear canal or be inserted too far.	1 Wires get hung up on numerous things (shoulder harness, NVG cable, mic boom, etc)	1 If adjusting helmet, tend to fall out.	
	5	0	0	0	0	
	6	0	0	1 Once in a while when CEP/NVG power supply/ODA cables get twisted together.	0	
	7	0	0	1	1 Only if it gets snagged.	
	8	0	1	1 If pushed in, the inner portion can be felt against inside of ear.	0	
	9	0	1	1 Tip would cause discomfort after 3-4 hours.	0	
	10	0	1	1 They are uncomfortable	0	
	7.	1	0	0	1	0
		2	0	1	1 I found the standard plugs to be too large	1
		3	1	1	1 The discomfort is only present when the earplug is not properly in the helmet earcup	0
4		0	0	1	1	
5		0	1	1 Initial issue had standard size. Changed to slim.	1	
6		0	0	1	1	
7		0	1	1 The sharp edges on the exterior piece.	0	
8		0	0	1	0	

Q1 Unit location	Q1 ID	Q14 Difficulty in fitting CEP Num	Q15 Discomfort inserting CEP	Q16 Wires pull on CEP when turning head	Q17 CEP move in/out of ear during flight
7.					
	9	1	Sometimes the foams don't fit right.	1	Unless I drape the wires over the rubber cover where the CEP plugs into the helmet to get them out of the way.
	10	0		1	When turning right
	11	0		1	Left slip out in right head movement.
	12	0		1	When wires pull.
	13	0		1	Only when wires are caught.
	14	0		1	A few times but only when they are very dirty.
	15	1	The plug does not form shape as readily as the yellow foam earplugs. Hard to insert.	0	If not properly inserted it tends to come loose.
	16	0	Sliding the helmet over the plugs.	0	
	17	0		1	Wires catch on goggles sometimes.
	18	1	Did not fit, fall out.	1	0
	19	1	Foam does not expand fast enough and cord pulls earplug out.	1	The wires pull on my earplugs when I turn my head
	20	0		1	Only when I have them stuck on something behind me.
	21	0		1	Sometimes the wire catches and tugs on the earplugs.
	22	1	Hurt the ears with the probe going down the canal.	0	0
	23	0		1	Every once in a while if wires are twisted.
	1	1	Originally I was given a small and sometimes have a hard time with goggles aligning.	0	0
8.					
	1	1	Originally I was given a small and sometimes have a hard time with goggles aligning.	0	0

Q1 Unit location	Q1 ID	Q14 Num	Q14 Difficulty in fitting CEP	Q15 Discomfort inserting CEP	Q16 Wires pull on CEP when turning head	Q17 CEP move in/out of ear during flight
	2	0		0	1	1
	3	1	Started off with standard length which caused discomfort in my ear canal because of length. Switched to short which eliminated the problem.	0	1	1
	4	0		0	1	1
	5	0		0	0	0
	6	1		1	1	1
	7	1		1	1	1
	8	0		1	1	0
	9	0		0	1	0
	10	1	The foam plugs are too mushy and start to expand very quickly. The housing hurts when it is pressed by earcups.	0	1	1
	11	0		1	0	1
	12	0		1	1	0
	13	1	Very narrow ear canals - must trim the slim ones even slimmer - plus the foam spins off tot easily.	1	1	0
	14	0		0	0	0
	15	0		1	1	0

8.

Q1 Unit location	Q1 ID	Q14 Difficulty in fitting CEP Num	Q15 Discomfort inserting CEP	Q16 Wires pull on CEP when turning head	Q17 CEP move in/out of ear during flight
8.					
	16	0	0	1	0
				Usually occurs after 2 hours of flight. Wires hang up on my neck and when I turned my head - it pulls the plug out.	
	17	1	1	0	1
		Constantly jabbed ear when inserting them because my ear canals are irregularly shaped	Same as #14		Due to my ears. As in #14
9.	1	0	0	0	0
	2	0	0	1	0
				Sometimes when not installed properly.	
	3	1	1	1	1
		Finding the right size plug and keeping it in the ear canal.	Scraping of canal	Only if wire comes loose of Velcro, usually occurs on NVG flights with other wires Velcro to helmet.	See #14
	4	0	0	1	0
	5	0	1	1	0
			After prolonged wear the center tube irritates the ear canal.	The wires catch on seat belts and other items. In the South with the humidity the wires stick to your neck and pull out when you turn your head.	
	6	0	0	1	0
				Occasionally when wearing other cords around the neck (NVG cord, flashlight)	
	7	0	0	0	1
	8	0	0	0	1
					Sometimes on long flights The center core sometimes prohibits the sponge insert to compress small enough for proper fit.
	9	0	1	1	0
			They are too big.	Turning my head hard to my left pull on the left side plug wire.	
	10	0	0	0	0
	11	0	1	1	0
			The edges on the end are sharp	The Velcro comes loose with NVG battery pack installed	
	12	1	1	0	0
		May need slim plugs	May be too large.		

Q1 Unit location	Q1 ID	Q14 Difficulty in fitting CEP Num	Q15 Discomfort inserting CEP	Q16 Wires pull on CEP when turning head	Q17 CEP move in/out of ear during flight
9.	13	0	0	1	1
					When it gets caught on flight vest and there is head movement.
	14	0	0	1	1
	15	0	0	1	0
					Wires tangle in/on other wires and attachments.
	16	1	1	0	1
					After 30 minutes -1 hour when flying in hot and humid environments (86+ degrees. Sweating caused the CEP to slip out during flight.
10.	1	0	0	1	0
					Sometimes I think it is when the wires are more toward the cheek than the chin.

Overall Total	N = 152	Yes = 35	Yes = 50	Yes = 114	Yes = 70
		N = 117	N = 100	N = 38	N = 81
		NR = 0	NR = 2	NR = 0	NR = 1

Q1 Unit location	Q1 ID	Q18 SHORT wire	LONG wire	Q19 Night flight problems	Q20 Connector interference	Q21 Connector location convenient	Q22 Clean or change tips	Q23 Cleaning process	Q24 Wax build-up
1.									
	1	Just right	Just right	0	0	1	20 hours	Wash in flight suit	0
	2	Just right	Just right	0	1	1	25-30 hours	Wash them with my flight suit	0
	3	Just right	Just right	0	1	1	Insufficient #s to know	N/A	0
	4	Just right	Too long	0	0	1	Haven't yet		0
	5	Just right	Too long	0	0	0	I don't know of another 20	rubbed between hands with soap.	1
	6			0	1	1	Sometimes. See #16	wash in hands with soap	0
	7	Too short	Too long	1	0	1	Cleaned about 25 hours	Wash in flight suit	1
	8	Just right	Just right	0	1	1	Haven't	Haven't	0
	9	Just right	Just right	0	1	1	When they get dirty	Put them in my flight suit pocket during laundering.	0
	10			1	1	1	N/A, only lasted three flights	N/A	0
	11		Too long	0	1	1	Once every three months	Washed with uniforms	0
	12	Just right	Just right	0	0	1	Whenever they appear dirty	Washed in flight suit pocket	0
	13	Just right	Just right	1	1	1		Left them in my flight suit pocket and washed it	1
	14	Just right	Just right	0	1	1	10 hours	In the pocket of ABDUs in washing machine	1
	15	Just right	Just right	0	1	1	Bi-weekly	In flight suit in washing machine	0

Q1 Unit location	Q1 ID	Q18 SHORT wire	Q19 LONG wire	Q19 Night flight problems	Q20 Connector interference	Q21 Connector location convenient	Q22 Clean or change tips	Q23 Cleaning process	Q24 Wax build-up
1.									
	16	Just right	Just right	1 Sometimes when turning head one of the CEPs would pull - wire adjustment fixed problem	0	1	Each week	In sleeve pocket normal wash	0
	17	Too short	Too short	0	1 Helmet wire, seat back	0	Didn't work long enough		1
	18	Just right	Just right	0	0	1	40-50 hours	Didn't	0
	19	Just right	Just right	1 Same as above. See Q #15-17	1 NVG strap catches it and pulls CEP from ear	1	10 hours	In wash	0
	20	Too long	Too long	1 NVG neck cord. See #16	1 NVGs	1	I didn't	I don't	0
	21	Just right	Too long	0	0	1	50 hours	Mild detergent	0
	22	Just right	Just right	0	0	1	10 hours	Soap and water	0
	23	Just right	Just right	0	0				0
2.									
	1	Too short	Too short	1 Getting tangled with the NVG battery pack.	0	1	3 months/100 hours	Just get new ones.	0
	2	Just right	Just right	0	0	1	25 hours		0
	3	Just right	Too long	0	1 It catches on intercom wire and seat belt.	1	50 hours then replace	Washed in washing machine.	0
	4	Just right	Just right	1 Velcro rubs on neck. Get rid of Velcro.	1	1	30 days garrison, 10 days field	N/A	0
	5	Too short	Too long	1 See #16	1 See #16	1	Every month	Washed with uniform	0
	6	Just right	Just right	0	1 Catches on survival vest and pulls out of ears	1	50 hours	Wash in flight suit	1
	7	Just right	Just right	1 As stated in #16	0	1	20 hours	Wash in pocket of flight suit	1

Q1 Unit location	Q1 ID	Q18 SHORT wire	LONG wire	Q19 Night flight problems	Q20 Connector interference	Q21 Connector location convenient	Q22 Clean or change tips	Q23 Cleaning process	Q24 Wax build-up
	8	Too short	Too short	0	0	1	After each flight	Wash in flight suit pocket	1
	9	Just right	Just right	0	0	1	10-20	Soapy water	0
	10	Just right	Too long	1 See #16	1 Wires catch on nape strap buckle	1	60-70 hours	Was told not to clean - get new ones	0
	11	Just right	Just right	0	1 See #16	1	Do not have any to replace. Need more foam inserts	Warm water	1
	12	Just right	Just right	0	1 ICS cable has at times pulled from my ear canal	1	30	Just changed them out	0
	13	Too short	Too long	0	1 Long wire gets caught on vest	1	20	Wash in flight suit pocket	0
	14	Just right	Too long	0	1 Vest - pinches between vest and neck	1	Not cleaned yet	Still work. Don't break up a good thing	0
	15	Just right	Too long	0	0 Very infrequently	1	30 hours	Hand wash in soap and water	0
	16	Too short	Too short	0	1 NVG flight on battery pack wires	1	10	Washed in flight suit	0
	17	Just right	Just right	1 Speaker cutting in and out	1 Shirt/ goggle	1	10-15	Wash with flight suit or exchanged	1
	18	Just right	Too short	0 Wires would be attached to bottom of helmet up to the point at the bottom of the ear covers (cups)	1 Anything behind neck	1	Not many	Got new ones or washed with uniform	
	19			0	0	0	Once a week	soap and water	0

2.

Q1 Unit location	Q1 ID	Q18 SHORT wire	LONG wire	Q19 Night flight problems	Q20 Connector interference	Q21 Connector location convenient	Q22 Clean or change tips	Q23 Cleaning process	Q24 Wax build-up
	20	Just right	Just right	1 Can sometimes get caught on things in the aircraft or tangled in other helmet mounted equipment	1 Can sometimes get caught on other equipment but has little effect on job performance to the negative		130 hours	Didn't	0
2.	1	Too short	Just right	1 Gets tangled with NVG cord	1	1	25-30	Soap and water	0
	2	Too short	Just right	1 Stern broke-earplug stuck in	1 50% vest	1	Every time wash flightsuit	Leave in flight suit pocket and clean in washer	0
3.	3	Too short	Just right	0	0	1	20-30	Leave them in left shoulder pocket during washing	0
	4	Too short	Too short	1 See #16	1 See 16,19		Every two weeks or as needed	Wash them	0
	5	Too short	Too long	0	1 Wire length too short or long and limited space in a/c	0	50	Hot water	1
	6	Just right	Just right	1 See question 16	0	1	Monthly	Put in pocket when washing flight suit	0
	7	Just Right	Just right	1 Installing the CEP in the back of the helmet at night occasionally proves difficult	0	1	occasionally	Placed in pocket of flight suit and laundered.	1
	8	Just right	Just right	1 With the application of ODDAs and NVGs that is too many items attached to our helmet	1 See 19	0	Never did	Didn't	0
	9	Just Right	Just Right	0	0	1	100	Wash/laundered	1
	10			0	0	1	unknown	Wash with flight suit	0
	11	Too long	Too long	0	0	1	150	Replaced	0

Q1 Unit location	Q1 ID	Q18 SHORT wire	LONG wire	Q19 Night flight problems	Q20 Connector interference	Q21 Connector location convenient	Q22 Clean or change tips	Q23 Cleaning process	Q24 Wax build-up
3.									
	12	Just right	Just right	1 Too many wires	1	1	6	Washed in flight suit pocket	1
	13	Too short	Just right	0	0	1	15	Washing machine - in pocket of clothes	1
	14	Too short	Too short	0	0	1	150	Replaced	0
	15	Too long	Too long	0	1 ICS cord and vest	1		Stopped using	1
	16			0	0	0	Did not wear long enough		0
	17	Just right	Just right	0	1	1			0
4.									
	1	Too short		0	1 Vest or goggle mount	1		Wash	0
	2	Too short	Too short	0	1 Collar	1	Every month or so.	Washed them in my flight suit.	0
	3	Too short	Just right	0	1 Only to the extent of inconvenience.	0	1 month	Left in flight suit while laundering	0
	4	Too short	Too short	1 Same as day	1	0	Each time	Water	0
	5	Just right	Just right	1 You have to make sure you have all your ALSE gear on before you put on your CEP.	1 Too many wires in the cockpit, i.e. NVG commo.	1	5 hours	Put in flight suit then washed it.	1
	6	I don't know. I don't know.		0	1 Seatbelt	0	30-40 hours	In my hand with soap.	0
	7	Too short	Just right	0	0	0	Haven't cleaned		0
	8			0	1 Not too bad	1			0
	9	Too short	Too short	1 Fall out	1 NVG neck piece	0	5 hours	wash	1

Q1 Unit location	Q1 ID	Q18 SHORT wire	LONG wire	Q19 Night flight problems	Q20 Connector interference	Q21 Connector location convenient	Q22 Clean or change tips	Q23 Cleaning process	Q24 Wax build-up
5.	1	Too short	Too short	0	1 Wire tends to lodge under shoulder restraint and pull loose.	1	N/A	N/A	0
	2	Just right	Just right	0	0	1	40	Soap and water.	0
	3	Just right	Just right	0	0	1	Clean weekly	By hand with soap and water.	0
	4	Too short	Just right	0	0	1	About 10	Left them in flight suit pocket and washed flight suit.	1
	5	Just right	Just right	0	1 See #16	1	Have not cleaned them yet.		0
	6	Too short	Too short	1	1 See #16	0	6	Warm soapy water then rinsed them in hand under sink.	0
	7	Just right	Just right	1	1 Sometimes it tangles around the aircraft battery.	1	50 hours	Water	0
	8	Just right	Just right	0	0	1	I'll never tell.	In flight suit and normal wash cycle.	0
	9	Just right	Just right	0	1 Refer to #16.	0	Haven't yet.	N/A	0
	10	Too short	Just right	0	0	1	Didn't change them yet.	Washed in machine in pocket of flight suit.	0
	11	Didn't know they had different wire lengths.	Didn't know they had different wire lengths.	0	0	1	So far - never.	N/A	0
	12	Just right	Too long	0	0	1	Clean them every 4 flights (10 hours).	Soap and water	0
	13	Too short	Just right	0	0	0	Haven't had them long enough		

Q1 Unit location	Q1 ID	Q18 SHORT wire	LONG wire	Q19 Night flight problems	Q20 Connector interference	Q21 Connector location convenient	Q22 Clean or change tips	Q23 Cleaning process	Q24 Wax build-up
5.	14	Just right	Just right	0	0	1	Have not cleaned yet		0
	15	Too short	Just right	0	1 Catches on shoulder harness straps.	1	Not done yet.	Not done yet.	0
	16	Just right	Just right	0	0	1			0
6.	1	Too short	Just right	1 Initially hard to get used to because I never wore earplugs prior to the CEP modification.	0	0	Once the ECU comes on Monthly line, what are we going to do?	Washed them IAW briefing instructions (flight suit pocket).	0
	2	Just right	Just right	0	0	0	Never	I don't, they're great.	0
	3	Just right	Just right	0	0	1	Haven't yet.	Haven't yet.	1
	4	Too short	Just right	0	0	1	10-20	In ABDU flight suit pocket in washing machine.	0
	5	Just right	Just right	0	0	0	N/A	Wash and dryer.	0
	6	Too short	Just right	0	1 See #16	1	30	Wash with flight suit.	0
	7	Too long	Too long	0	0	1	10 hours	Water	0
	8	Too long	Too long	0	1 Tends to get caught	0			0
	9	Just right	Too long	0	1 Long wire would catch on flight vest.	1	Washed with flight suit.	Regular washing.	0
	10	Too short	Too long	0	1 Catches on vest.	0	Don't wear it.	N/A	0
7.	1			0	1 Especially when wearing NVGs	1	haven't	replaced them	0
	2	Just right	Just right	0	0	1	100	Soap and water	0
	3	Too long		0	0	1	50	Tried to wipe them off with a damp cloth	0

Q1 Unit location	Q1 ID	Q18 SHORT wire	LONG wire	Q19 Night flight problems	Q20 Connector interference	Q21 Connector location convenient	Q22 Clean or change tips	Q23 Cleaning process	Q24 Wax build-up
7.	4			1 There are already too many wires coming off your head. There is the oversized ICS cord, 550 cord for NVG, A/C power for NVGs, ODA cord, and the CEP cord. I'd hate to think what flying in an NBC environment would be.	1 See #16	1 Perhaps two short wires located on the helmet nearest the ears. The best solution is no external contraption.	10	Soapy water and rub between fingers	0
	5	Too short	Too short	1 From time to time catches on NVG power supply cable system.	1 As explained	1			0
	6	Just right	too long	0	1 Seatbelt	1	100	Washed with flight	1
	7	Just right	Too long	0	1	1	When dirty	Placed in flight suit pocket and laundered	1
	8	Just right	Just right	0	0	1	75	I don't	0
	9	Just right	Too long	0	1 Occasionally	1	Periodically	Wash	1
	10	Just right	Too long	0	0	1	No replacements		0
	11	Just right	Too long	0	0	1		Replaced	1
	12	Just right	Too long	0	1 See #17	1	Never - too hard to replace	Soapy water	1
	13	Just right	Too long	0	0	1	60	Never cleaned, just replaced	0
	14	Just right	Too long	0	1 We wear ANVIS power cords and flotation, it tends to snag.	1	10	Replaced	0
	15	Just right	Just right	0	0	1	Kept breaking, didn't get a chance to clean them.	Didn't	0
	16	Just right	Just right	0	0	1	100	Replaced	1

Q1 Unit location	Q1 ID	Q18 SHORT wire	LONG wire	Q19 Night flight problems	Q20 Connector interference	Q21 Connector location convenient	Q22 Clean or change tips	Q23 Cleaning process	Q24 Wax build-up
	17			0	0	0	5	Water	0
	18		Too long	1	1	0	10	File 13	0
	19	Just right	Too long	0	1	0			1
	20	Just right	Just right	0	0	1	10-100 depending on color	When washing flight suit	0
	21	Just right	Just right	0	1	1	75	Replaced	1
	22	Just right	Too long	1	1	0	25	Soap and water	0
				Same as above	They get hung on seatbelts behind my head.	Try doing it at night while on a real world mission with a 15 minute launch time.			
	23	Just right	Just right	0	0	1	15	With flight suit in pocket.	1
7.									
	1	Just right	Too long	0	0	1	50 hours (1 month)	Washed in flight suit pocket with foam	1
	2	Just right	Just right	0	1	1	Once a week	In my flight suits in the wash and air dry.	1
	3	Just right	Too long	1	1	0	50	Washed in flight suit pocket	0
				Sometimes pulled by NVG power cord and ODA cable.	See #16 and #19	Inside helmet to eliminate exposed wires			
	4	Too short	Too short	1	1	1	20 hours	Soap and water	1
				CEP wire entangles in ICS wire, ODA, NVG power supply. I'm a flying octopus.	Sometimes catches and restricts head movement.				
	5	Just right	Just right	0	0	1	Have not changed them	Have not cleaned them	0
	6			1	1	0	Never	d/n/a	0
	7		Too long	0	1	1	100	In my flight suit in the laundry	0
	8	Too short	Too short	0	1	1			0
				I did not try it.	In the OH-58D we have several other cords to contend with.				

Q1 Unit location	Q1 ID	Q18 SHORT wire	LONG wire	Q19 Night flight problems	Q20 Connector interference	Q21 Connector location convenient	Q22 Clean or change tips	Q23 Cleaning process	Q24 Wax build-up	
8.	9	Just right	Just right	0	1 See #16	1	45	Replace the extremely deteriorated tips.	1	
	10	Just right	Just right	0	0	1	5	Washed inside flight suit pocket	0	
	11	Just right	Just right	0	0	1	100	Swapped out	0	
	12	Too long	Too long	1 See #16	1 Catches on NVG/ODA cord and ICS cord	1	10	Laundered in flight	0	
	13	Too short	Too short	0	0	0 Individual wire and connector for each ear.	1 week needed replacement	Soap and water	1	
	14	Too short	Too short	0	0	1	25	Threw them away	0	
	15	Too short	Just right	0	1 The OH-58D has three other wires attached to the head/helmet and ANVIS	1	I didn't		0	
	16	Just right	Just right	1 Plug pulls out. See #16.	1 Occasionally it will hang up on other helmet parts	1	100 hours	I didn't. I replaced them.	0	
	17	Just right	Just right	0	0	0	10 hours	Washed in flight suit	0	
	9.	1	Just right	Just right	0	0	1	25 hours	Wash in pocket of flight suit	0
		2	Just right	Just right	0	1 NVG neck cord/chin strap	1	50 hours, need more tips	Leave in pocket of flight suit during wash	0
		3			1 See #16	0	1	60 or 80 hours (clean at 20-40)	Soap and water	1
		4	Just right	Too long	0	1 Long wire on vest sometimes.	1	Every 2-3 flights	Wash in arm pocket of flight suit.	1
		5	Just right	Too long	1 Extra wires are getting caught on items in aircraft.	1 They catch on seatbelts, ICS cords and stick to you.	1	20	Wash with flight suit	0
		6	Just right	Just right	1 See #16	0	1	20	Wash in flight suit	0
7		Too short	Too short	0	0	1	100 hours	Flight suit pocket	1	

Q1 Unit location	Q1 ID	Q18 SHORT wire	LONG wire	Q19 Night flight problems	Q20 Connector interference	Q21 Connector location convenient	Q22 Clean or change tips	Q23 Cleaning process	Q24 Wax build-up
9.	8	Just right		0	0	1	10	Inside flight suit pocket during laundry	0
	9	Too short	Just right	0	0	1		Clean them?	0
	10	Too short	Just right	0	0	1	10	Washed in flight suit pocket	0
	11	Just right	Just right	1 See #16	0	0	I haven't	See above	0
	12	Just right	Just right	0	0	1	Haven't yet	Haven't yet	0
	13	Too short	Just right	0	1 Flight vest	1			0
	14	Just right	Too long	0	0	1	Clean once a week	Wash with flight suit	0
	15			0	1 Other attachment - NVG cord	0	Every flight	Washed in flight suit	0
	16	Too short	Just right	1 Too many cords and wires to hook up and keep from getting tangled I.e. CEP, NVG battery pack, NVG lanyard, extension cable for battery pack, ICS cord, ODA cord!	0	1		Flight suit pocket in wash	0
10.	1	Just right	Just right	0			100, I'm lazy.	Flight suit pocket in washer	0

Overall Total N = 152 Short-Just right = 134 Yes = 40
 Long-Just right = 132 N = 109 NR = 3
 Yes = 78
 N = 72
 NR = 2
 Yes = 118
 N = 28
 NR = 6
 Yes = 37
 N = 111
 NR = 4

Q1 Unit location	Q1 ID	Q25 Canal Num discomfort	Rate discomfort	Q26 External ear discomfort	Q27 CEP hot spots	Q28 Onset of CEP discomfort	Q29 Rate overall fit and comfort
		1	1	0	1	2 hours	1
		2	1	0	0	2-3 hours	1
		3	0	0	0		4
		4	0	0	0		
		5	1	0	0	4+ hours	4
		6	1	1	0	2 1/2 hours	5
		7	1	0	0	2 hours	4
		8	1	0	0	2 hours	5
		9	1	0	0		4
		10	1	1	1	1/2 hour	3
		11	0	0	0		4
		12	1	0	0	2 hours	7
		13	1	1	0		
		14	1	0	0	2 hours	6
		15	1	0	0	1/2 hour	4
		16	0	0	0	4 hours	4
		17	1	0	0	2 hours	4
		18	1	1	0	1/2 hour	3
		19	1	1	1	3 hours	4
		20	0	0	0		
		21	1	0	0	3 hours	3
		22	0	0	0		5

1.

Q1 Unit location	Q1 ID	Q25 Canal Num discomfort	Rate discomfort	Q26 External ear discomfort	Q27 CEP hot spots	Q28 Onset of CEP discomfort	Q29 Rate overall fit and comfort
1.							
	23	0		0	0		4
2.							
	1	0		0	0	4 hours	4
	2	0		0	0		7
	3	1	1 Itching	0	0	1 hour	7
	4	0		0	0		7
	5	1	1 On long flights mildly uncomfortable.	0	0	2 hours	4
	6	1	2	0	0	2 1/2-3 hours	4
	7	0		0	0		4
	8	1	3	0	0	1 1/2 hours	2
	9	0		0	0		4
	10	0		1	1	2.5 hours	3
				Barrel of external earplug pressed against outside ear due to pressure from earcup		See #26	
	11	0		0	0		7
	12	0		0	0		4
	13	1	1	0	0	1/2 hour	2
	14	0		1	0	4	1
				Cord - at times pinches between earcup if not positioned correctly		After 2.5 hours	
	15	1	1 Sometimes on long flights	0	0	4	1
	16	0		0	0		4
	17	0		0	0	3.5 hours	4
	18	1	1	0	0	1 hour	4
	19	1	2	1	0	Less than .5 hour	2
				Too big			

Q1 Unit location	Q1 ID	Q25 Canal Num discomfort	Rate discomfort	Q26 External ear discomfort	Q27 CEP hot spots	Q28 Onset of CEP discomfort	Q29 Rate overall fit and comfort
2.	20	1	2	1	0	1 hour	3
				1	On long missions or several flights over short period of time CEP will rest against outer ear and cause discomfort		
3.	1	1	1	0	0	1/2	7
	2	0	1	0	0		4
	3	0	0	0	0		4
	4	0	0	0	0		7
	5	0	0	0	0	4	7
	6	0	0	0	0	1.5	5
	7	0	0	0	0		4
	8	0	0	0	0		4
	9	1	1	0	0		4
	10	0	0	0	0		4
	11	1	1	0	0	2	4
	12	0	0	0	0		6
	13	1	1	0	0		5
	14	1	1	0	0		3
	15	1	2	0	0	1/2 hour	4
	16	1	2	1	0	1/2 hour	1
				1	The metal part of the CEP presses into my ears		
	17	1	2	0	0	1/2 hour	4
4.	1	1	1	0	0	1/2 hour	6
	2	0	0	0	0		5
	3	1	2	0	0	1 hour	7
	4	1	3	1	0	1/2 hour	1
				1	Hurt		

Q1 Unit location	Q1 ID	Q1 Num	Q25 Canal discomfort	Rate discomfort	Q26 External ear discomfort	Q27 CEP hot spots	Q28 Onset of CEP discomfort	Q29 Rate overall fit and comfort	
4.	5	1		2	0	0		6	
	6	1		2	0	0	1/2-1 hour	3	
	7	0			0	0		4	
	8	1		1	1	0	3 hours	5	
	9	1		1	0	0	3 hours	6	
	5.	1	1		1	0	0	1 hour	4
		2	1		1	0	0		5
		3	1		2	0	0	1 hour	3
		4	1		2	0	0	1 hour	6
5		1		2	0	0	1 hour	7	
6		0			0	0		3	
7		1		2	1	0	1/2 hour	5	
8		0			0	0		4	
9		1		1	0	0	1/2 hour	4	
10		0			0	0		4	
11		0			0	0		6	
12		0			0	0		6	
13		0			0	0		4	
14		0			0	0		5	
15		0			0	0		6	
16					1	0		1/2 hour	3

4.

5.

Q1 Unit location	Q1 ID	Q25 Canal Num discomfort	Rate discomfort	Q26 External ear discomfort	Q27 CEP hot spots	Q28 Onset of CEP discomfort	Q29 Rate overall fit and comfort
6.							
	1	1	2	0	0	1/2 hour	4
			Initially moderately uncomfortable				
	2	0		0	0		
	3	1	1	0	0		4
	4	0		0	0		4
	5	0		0	0		6
	6	1	1	0	1	1/2 hour	4
	7	0		0	0		7
	8	0		1	1	1 hour	4
			If wire lays on top of outer ear it tends to cause a hot spot.		See previous.		
	9	1	2	0	0	3 hours	4
			After 3-4 hours.				
	10	1	3	1	1	1/2 hour	1
				The wires are pressed into my ear from the earcup.	Where the earcups push it into my ear.		
7.							
	1	1	2	0	1	1/2 hour	4
	2	1	1	0	0	1/2 hour then subsides	4
	3	1	1	0	0		4
	4	1	2	1	0	1 hour	5
			The part that protruded from my ear is in contact w/ earmuff and after an hour of flying it becomes painful enough to take the CEP's out.	1	See #25		
	5	1	2	0	0	1/2 hour	7
	6	1	1	0	0	1/2 hour	7
	7	0		1	0		
			Edges feel sharp				

Q1 Unit location	Q1 ID	Q25 Canal discomfort	Rate discomfort	Q26 External ear discomfort	Q27 CEP hot spots	Q28 Onset of CEP discomfort	Q29 Rate overall fit and comfort
7.							
	8	0		0	0		7
	9	1	1 Only when I get the wrong size.	0	0		4
	10	0		0	0		4
	11	0		1 Size of speaker	0	1 hour	7
	12	0		0	0	1 hour	7
	13	0		0	0		7
	14	0		0	0		7
	15	0		0	0		7
	16	0		0	0		4
	17	1	1 Itchy	0	0	1 hour	5
	18	1	2	1	1	1 hour	4
	19	0		0	0		4
	20	1	1 Sometimes	0	1 Occasionally	3 hours	7
	21	0		1 Sometimes just a mild hot spot from the black plastic portion pressing against the outer ear	1 See #26	1.5 hours	4
	22	1	2	0	0	1/2 hour	4
	23	0		0	0		7
8.							
	1	0		0	0	1/2 hour	6
	2	0		0	0	3 hours	6
	3	1	2 Only with standard foam tip	0	0	1 hour	6
	4	1	2	0	0	1 hour	5
	5	1	2	0	0	1/2 hour	3
	6	1	2	0	0	1/2 hour	1
	7	1	3	1	0	Less than 1/2	1

Q1 Unit location	Q1 ID	Q25 Canal Num discomfort	Rate discomfort	Q26 External ear discomfort	Q27 CEP hot spots	Q28 Onset of CEP discomfort	Q29 Rate overall fit and comfort	
8.	8	1	1	0	0	1/2 hour	7	
	9	1	2	0	0		4	
	10	0		1	0		6	
						The housing sometimes is pressed against the ear by the helmet earcup.		
	11	1	2	1	1	Soreness	2 hours	
	12	1	1	1	0	In ear canals Initial discomfort was gone after 20 hours.	1 hour	
	13	1	2	1	0	Where the wire presses on earlobe.	2 hours	
	14	0		0	0		2	
	15	1	2	2	0		7	
	16	1	2	2	0	After long flights (2.5 hrs)	1/2 hour	
							2 hours	
	17	1	1	1	0	Itching	1/2 hour	
	9.	1	0		0	0		4
		2	1	1	0	0		6
		3	1	1	0	0		7
		4	0		1	0	The metal connector on the outside of ear.	4
		5	1	2	0	0		7
6		1	1	0	0	After 3 hours	2 1/2-3 hours	
7		0	1	0	0	Occasionally	1 1/2 hours	
8		0		0	0		3 1/2 hours	
9		0		0	0		4	
10		0		0	0		4	
11		0		0	0		3	
12		1	1	1	0		5	
13		0		0	0	Flight with NVGs	6	

Q1 Unit location	Q1 ID	Q25 Canal Num discomfort	Rate discomfort	Q26 External ear discomfort	Q27 CEP hot spots	Q28 Onset of CEP discomfort	Q29 Rate overall fit and comfort
9.	14	0		0	0		
	15	1	2 Itching	0	0		
	16	0		1 Hard plastic when trying to keep CEP in the ear.	0		4
10.	1	0		1 Sometimes with the plastic part, however with the next generation there probably won't be a problem.	0		5
Overall Total	N = 152	Yes = 81 N = 69 NR = 2	Mean = 1.6	Yes = 29 N = 123 NR = 0	Yes = 13 N = 138 NR = 1		Mean = 4.6 NR = 10

Q1 Unit location	Q1 ID	Q30 Problem donning/doffing helmet w/CEP	Q31 Significant problem completing misston w/extra step	Q32 Problem don/doff w/gloves	Q33 Discomfort if forget to disconnect CEP from helmet
1.	1	0	0	1	1
	2	1	0	1	0
	3	1	Care had to be taken when putting helmet on or it 0 pulled plug out	1	1
	4	0	0	0	1
	5	1	0	1	1
	6	1	Extra care is required to not dislodge the CEP.	1	0
	7	0	0	0	1
	8	1	Without spreading ear cups the CEPs normally hit the earcups. You must also take care not to pinch the wire while adjusting the helmet.	1	0
	9	1	Cannot put gloves on before donning helmet because I cannot put wire in helmet hole w/ gloves on.	1	0
	10	1	0	1	1
	11	1	Takes more time	1	0
	12	1	0	0	0
	13	1	Takes longer to get ready	0	0
	14	0	0	0	0
	15	1	You must be careful not to tug in the wires otherwise they pull the earplug out	0	0
	16	1	Must take special care not to pull the wires out while doffing.	1	1
	17	1	Remembering	0	0
	18	1	The ear cups must be pulled over the black cylinders of as not to disturb them	0	0

Q1 Unit location	Q1 ID	Q30 Problem donning/doffing helmet w/CEP	Q31 Significant problem completing mission w/extra step	Q32 Problem don/doff w/gloves	Q33 Discomfort if forget to disconnect CEP from helmet
1.	19	0	0	0	0
	20	1	0	0	0
	21	1	0	1	0
	22	0	0	0	0
	23	1	0	1	0
2.	1	1	0	1	1
	2	0	0	0	0
	3	1	0	1	0
	4	1	0	1	0
	5	1	0	1	1
	6	0	0	0	0
	7	1	0	1	0

Q1 Unit location	Q1 ID	Q30 Problem donning/doffing helmet w/CEP	Q31 Significant problem completing mission w/extra step	Q32 Problem don/doff w/gloves	Q33 Discomfort if forget to disconnect CEP from helmet
	2.				
	8	1 More crap to plug in! We already have too much crap attached to our heads.	1 You've apparently never tried this yourself.	1 It hurt like hell	1
	9	1 Have to pull the earcups further apart so that they don't pull CEPs out	0	0	0
	10	1 Expand earcups further/ extra time to put on	0	1 Can't use gloves	0
	11	1 Must pull earcups out to avoid CEP pulling out	0	0 Never done it	0
	12	1 It takes just a few more seconds to connect	0	1 Cannot feel the HGU-56 connector to insert the CEPs	0
	13	1 Must spread helmet earcups apart further	0	1 Getting proper fit sometimes takes 2-3 tries with gloves on. Gloves get CEP dirty quickly	0
	14	1 Having to undo shin strap to allow total expansion of ear cups in order not to pull CEP	0	1 No way can I place the CEP in the ear with glove on (same as regular earplugs). Plus connector into helmet is hard to find hole	0
	15	1 Must be careful not to pull them out when donning helmet	0	1 Hard to plug into back of helmet with gloves on	0
	16	1 You must pull helmet wider apart to keep CEPs from getting worked out by ear cups	0	0	0
	17	0	0	1	0
	18	1 Only if CEP is caught on something and pulls out of the ear canal	1 Only when facing time constraints	1 I was only able to insert foam tips without my gloves	0
	19	1 Very difficult process	1 Wires in the way and distracting pain	1 Can't feel	0 Relief!
	20	1 Must be careful donning helmet otherwise CEP can be brushed out of the ear canal	0	0	0

Q1 Unit location	Q1 ID	Q30 Problem donning/doffing helmet w/CEP	Q31 Significant problem completing mission w/extra step	Q32 Problem don/doff w/gloves	Q33 Discomfort if forget to disconnect CEP from helmet
	1	1	0	1	0
	2	1	0	0	1
	3	1	1	1	0
	4	0	0	0	0
	5	1	0	0	0
	6	0	0	0	0
	7	1	0	1	0
	8	1	0	1	0
	9	0	0	0	0
	10	1	0	0	0
	11	0	0	1	0
	12	1	1	1	1
	13	1	0	1	0
	14	0	0	1	0
	15	1	0	1	0

3.

Q1 Unit location	Q1 ID	Q30 Problem donning/doffing helmet w/CEP	Q31 Significant problem completing mission w/extra step	Q32 Problem don/doff w/gloves	Q33 Discomfort if forget to disconnect CEP from helmet
	16	1 You must connect the CEP to the back of the helmet after donning it	0	1 I can't seat them with gloves. But I can't seat foam earplugs with gloves either	0
	17	1 Must use side to side method	0	0	0
3.	1	1 You must pull earcups back to place over plugs and back, nape strap has trouble sliding out.	0	1 Think about it.	1 It yanked on my ear.
	2	1 Must slip one ear on at a time to avoid pulling CEP out.	0	1 Less feeling	0
	3	1 Increases time	1 It's just one more wire to put on, in addition to all the other equipment. It's not a habit yet.	1	0
	4	1 Knocks plugs out	1	0	0
	5	1 Pulling earcups wider to pull it over the CEP.	0	1 The gloves create a different feel to the CEP. Plus the CEPs are small and hard to move around with gloves on.	0
	6	1 You really have to watch out for those wires.	0 Unless its an immediate launch thing then I will just not use the earplugs.	1 I don't use the gloves because its impossible to find the plug for the CEP with them on.	1 The plastic digs the ear canal.
	7	1 I have to pull the helmet out from my ears as I put it on to keep from knocking out the earplugs.	0	0	1 Hurts my ears. I only did it once though!
	8	1 Takes more time.	0	1 Gloves on last	0
	9	1 Makes them fall out	0	1 Connection is too small.	0

Q1 Unit location	Q1 ID	Q30 Problem donning/doffing helmet w/CEP	Q31 Significant problem completing mission w/extra step	Q32 Problem don/doff w/gloves	Q33 Discomfort if forget to disconnect CEP from helmet
	5.				
	1	1 Must be extremely careful in placing the earcups over the ears since the plugs come out easily.	0	1	0
	2	1	0	1	0
	3	1 Helmet must go on before run-up so you can connect wires before gloves are donned.	0	1	1
	4	1 You have to remember to connect the wires to the helmet after you put the helmet on.	0	1	0
	5	1	0	1	0
	6	1 This is the real problem with this product. You must plug in the CEP in your ears, then put on your helmet and lastly plug in your CEP to the helmet.	1	1	0
	7	0	0	0	0
	8	1 The sides of the helmet must be stretched outward just a little extra to ensure not to snag the CEP loose.	0	1	0
	9	1 Have to put the wire in after donning the helmet.	0	1	0
	10	1 You must grasp earcups and spread out to go over ears, to ensure you don't knock the earplugs out of your ear.	0	0	0

Q1 Unit location	Q1 ID Num	Q30 Problem donning/doffing helmet w/CEP	Q31 Significant problem completing mission w/extra step	Q32 Problem don/doff w/gloves	Q33 Discomfort if forget to disconnect CEP from helmet
5.	11	1 I put the helmet on early in the run-up procedure. It takes a little more time.	0	1	0
	12	1 Takes longer	0	1	0
	13	1 Pull the earcups out further to ensure they do not snare the wires.	0	1	0
	14	1	0	0	0
	15	1 I have to get careful not to pull them out when the earcups contact the wires.	0	1	0
	16	1	0	1	0
6.	1	1 A lot more time and more tenderness involved.	0	0	1
	2	1 It takes longer.	0	1	0
	3	1 You have to be really careful when using NVGs or the mic cord. The CEP cords have to be on top of everything else.	0	1	0
	4	1 More careful placing helmet ear cups over ears to prevent them falling out, plus additional step of plugging in connector.	0	1	0
	5	0	0	0	0
	6	0	0	1	0
	7	0	0	1	1
	8	0	0	0	0

Q1 Unit location	Q1 ID Num	Q30 Problem donning/doffing helmet w/CEP	Q31 Significant problem completing mission w/extra step	Q32 Problem don/doff w/gloves	Q33 Discomfort if forget to disconnect CEP from helmet
6.	9	0	0	0	0
	10	1 Have to pay close attention to the wires.	1 It is awkward.	1 Can't feel wires.	0
7.	1	1 Just have to plug in CEPs	0	0	1 It is rough getting pulled out of my ears
	2	0	0	0	1 The helmet pulled the plugs from the ear canal
	3	1 I hold the earcups away from my ears so they don't pull the earplugs out	0	1 It is hard to locate the connector on the helmet to plug the earplugs into with gloves on	0
	4	1 It' one more thing to do before you fly.	0	1 Putting any hearing protection w/gloves on is	0
	5	0	0	0	0
	6	1 Must undo chin strap completely to don helmet.	0	1 I plug in the CEP into helmet prior to putting on my gloves.	0
	7	1 Insert CEP, once helmet is on and aircraft is 100%, plug in CEP.	0	1 CEP too small	0
	8	1 I must carefully fit the ear portion of the helmet over the ear plugs.	0	0	0
	9	1 Have to be careful going over ears.	0	0	0
	10	1 Must be careful not to pull out plugs	0	0	0
	11	1 Put CEP in first and position wire not to get caught up on helmet.	0	1 Can't feel the wires.	0
	12	1 Put earplugs in first then wear helmet and	0	0	0
	13	1 At first the earcups had to be pulled outward significantly to keep the CEPs from being pulled out, but with experience its much easier.	0	1 I can't insert properly so I remove the gloves to insert the CEP.	0

Q1 Unit location	Q1 ID	Q30 Problem donning/doffing helmet w/CEP	Q31 Significant problem completing mission w/extra step	Q32 Problem don/doff w/gloves	Q33 Discomfort if forget to disconnect CEP from helmet
7.					
	14	1 You must be careful to remove the plug prior to doffing the helmet. I put my gloves on after the helmet to allow for easy plugging in.	0	1	1 The recessed jack is hard to find when gloved.
	15	1 I have to spread the helmet apart so it won't catch on the ear plug and break off	0	1	0
	16	0	0	1	0
	17	1 Slower	0	0	0
	18	1	0	1	1
	19	1 You have to hook up the wires - duh .	0	1	0
	20	1 I have to hold the earcups open more. Not a problem.	0	1	0
	21	1 Need to spread the helmet/earcups more to slip over my ears w/o pulling out CEP.	0	0	0
	22	1 Have to put them on out of the normal sequence for me. I have to wait to strap in. Refuel is where most problems occur. Getting out then in.	1	1	1
	23	1 You have to connect the wire.	0	1	1
8.					
	1	1	0	1	1
	2	0	0	0	0
	3	1 Requires earcups to be pulled apart more to prevent knocking plugs from ears.	0	1	1

Q1 Unit location	Q1 ID Num	Q30 Problem donning/doffing helmet w/CEP	Q31 Significant problem completing mission w/extra step	Q32 Problem don/doff w/gloves	Q33 Discomfort if forget to disconnect CEP from helmet
	4	0	0	1	1
	5	1	0	0	0
	6	1	0	1	1
	7	1	1	1	1
	8	1	0	1	0
	9	1	0	1	0
	10	1	0	0	0
	11	0	0	1	0
	12	1	0	0	0
	13	0	0	1	1
	14	0	0	0	0
	15	1	0	1	0
	16	1	0	1	1
	17	1	1	1	1

8.

Finger tip dexterity w/gloves does not allow for easy plug in of CEP.

You must pull the earcups out further.

I must leave one glove off until my helmet and CEP is on.

Carefully spread the earcups and gently slide over the CEPs.

Slower, more deliberate.

Must use caution not to dislodge the CEP when donning the helmet

Additional steps to connect the CEP

Takes more time to don. Also you have to make sure that everything is positioned right so you don't hang up the cord and pull it out during

It is a pain to try to fit it up to the helmet.

Wires pulling earplug out.

Not enough feeling to guide the helmet on without knocking the CEPs out of the ear.

Never wear gloves (impossible)

I do not attempt

Do it before you put your gloves on.

I can do it but is more difficult.

I can't. My gloves have to be off otherwise there is not enough sensitivity.

Ripped my ears off !!!

Q1 Unit location	Q1 ID Num	Q30 Problem donning/doffing helmet w/CEP	Q31 Significant problem completing mission w/extra step	Q32 Problem don/doff w/gloves	Q33 Discomfort if forget to disconnect CEP from helmet
	1	0	0	0	0
	2	1	0	1	0
	3	1	0	1	0
	4	0	0	0	1
	5	1	0	1	0
	6	1	0	1	1
	7	1	0	1	0
	8	0	0	1	0
	9	1	0	1	0
	10	1	0	0	0
	11	1	0	1	0
	12	1	0	1	0
	13	1	0	1	0
	14	1	0	1	1
	15	1	0	1	1
	16	1	0	1	1

9.

Q1 Unit location	Q1 ID	Q1 Num	Q30 Problem donning/doffing helmet w/CEP	Q31 Significant problem completing mission w/extra step	Q32 Problem don/doff w/gloves	Q33 Disconnect if forget to disconnect CEP from helmet
10.	1	1	I have to be a little more careful ensuring that the earcups go over my ears so as not to pull out the CEPs.	0	1	Can't do it, but it's no problem.
Overall Total	N = 152	Yes = 121 No = 31 NR = 0		Yes = 12 No = 139 NR = 1	Yes = 102 No = 48 NR = 2	Yes = 36 No = 111 NR = 5

Q1	Q1	Q34	Q35	Q36	Q37	Q38	Q39	Q40	Q41	
Unit location	ID	Rate donning/doffing	Rate ICS clarity	Rate gender clarity (Male)	Rate gender clarity (Female)	Rate overall speech clarity	Rate noise reduction	Rate warning signals	Rate monitoring A/C noises	Rate weapons fire
1.	1	4	7	7	7	7	5	7	3	6
	2	6	7	7	7	7	7	7	7	7
	3	3	6	4	4	6	6	6	6	6
	4	3	6	6	5	6	4	6	3	4
	5	3	7	7	7	7	6	6	5	4
	6	4	7	7	7	7	7	7	4	7
	7	3	7	7	7	7	6	6	6	5
	8	1	7	7	7	7	4	7	4	4
	9	4	7	7	7	7	7	7	5	5
	10	3	5	4	4	5	4	5		
	11	3	7	7	7	7	7	7	3	6
	12	3	7	4	4	7	5	5	4	4
	13	2	7	6	6	6	6	6	3	6
	14	4	7	7	7	7	7	7	4	7
	15	3	7	6	6	7	6	4	3	5
	16	4	7	7	7	7	7	7	3	6
	17	4	6	6	6	6	4	4	4	4
	18	3	7	7	7	7	6	6	6	6
	19	4	7	7	7	7	7	7	6	6
	20		7	7	7	7	7	7	3	7
	21	3	7	7	7	7	7	3	1	7
	22	4	7	7	7	7	7	7	7	5
	23		6	6	6	6	6	4	4	4
2.	1		7	7	7	7	7	7	2	7
	2	4	7	7	7	7	6	5	4	7

Q1	Q1	Q34	Q35	Q36	Q37	Q38	Q39	Q40	Q41
Unit location	ID	Rate	Rate ICS	Rate gender clarity	Rate overall	Rate noise	Rate warning	Rate monitoring	Rate
	Num	donning/doffing	clarity	(Male)	speech clarity	reduction	signals	A/C noises	weapons fire
	3	3	7	6	6	7	6	3	5
	4	4	7	6	7	6	7	4	4
	5	4	7	7	7	6	6	2	6
	6	4	7	6	7	7	7	3	6
	7	4	7	7	7	4	6	4	4
	8	1	7	7	7	7	7	6	7
	9	4	7	7	7	5	7	5	7
	10	2	7	7	7	3	1	4	3
	11	3	7	7	7	7	7	7	7
	12	4	7	7	7	6	7	6	6
	13	3	6	6	6	6	6	5	6
	14	2	7	4	7	7	7	2	6
	15	3	7	7	7	4	7	2	5
	16	4	7	7	7	4	7	4	4
	17	4	6	6	6	6	7	3	5
	18	3	7	7	7	7	7	4	6
	19	3	6	7	7	4	4	4	5
	20	4	7	7	7	4	7	6	4
	1	4	7	7	7	7	4	6	7
	2		7	7	7	7	7	4	5
	3	4	7	7	7	7	7	7	7
	4	6	7	7	7	7	7	7	7
	5	7	7	7	7	7	7	7	7
	6	4	7	7	7	7	7	7	7
	7	3	7	7	7	4	7	4	4

2.

3.

Q1 Unit location	Q1 ID	Q34 Rate Num donning/doffing	Q35 Rate ICS clarity	Q36 Rate gender clarity (Male) (Female)	Q37 Rate overall speech clarity	Q38 Rate noise reduction	Q39 Rate warning signals	Q40 Rate monitoring A/C noises	Q41 Rate weapons fire
3.									
	8	4	6	6	6	5	4	4	4
	9	4	6	6	6	6	5	6	7
	10	4	7	7	7	6	7	3	6
	11	4	7	7	7	4	7	4	4
	12	2	6	6	6	6	6	4	6
	13	3	7	7	7	6	6	3	5
	14	4	7	7	7	4	7	3	4
	15	4	7	6	6	4	4	4	4
	16	3	5	5	5	4	4	4	4
	17	4	4	4	4	4	1	4	4
4.									
	1	3	7	6	6	6	7	6	6
	2	2	7	7	7	7	7	5	3
	3	1	7	7	7	7	7	6	6
	4	1	4	4	4	4	4	4	4
	5	6	7	5	5	6	6	6	6
	6	2	5			5	5	4	3
	7	3	7	7	7	7	7	7	7
	8	5	7	7	7	7	7	5	5
	9	4	7	7	7	7	7	7	7
5.									
	1		7	7	7	3	7	3	
	2	4	5	5	5	5	7	5	5
	3	3	7	7	7	7	7	5	7
	4	6	7	7	7	7	7	7	6
	5	3	7	7	7	7	7	3	

Q1	Q1	Q34	Q35	Q36	Q37	Q38	Q39	Q40	Q41
Unit location	ID	Rate	Rate ICS	Rate gender clarity	Rate overall	Rate noise	Rate warning	Rate monitoring	Rate
		Num	clarity	(Male)	speech clarity	reduction	signals	A/C noises	weapons fire
		donning/doffing		(Female)					
5.	6	3	7	4	6	6	7	4	4
	7	5	7	7	7	7	7	7	7
	8	4	7	7	7	6	7	6	6
	9	3	7	7	7	3	7	4	4
	10	4	7	5	7	4	7	7	5
	11	4	7	7	7	7	7	7	5
	12		7	7	7	7	6	2	6
	13	4	7	7	7	4	7	4	7
	14	4	6	6	6	6	6	4	4
	15	6	7	7	7	4	7	4	4
	16	3	7	7	7	7	1	4	4
6.	1	5	6	6	6	5	5	6	6
	2		6	6	6	7	7	3	7
	3	4	7	7	7	4	7	7	4
	4	2	7	7	7	7	6	7	4
	5	4	7	7	7	7	7	7	4
	6	4	7	7	7	3	7	3	7
	7	7	7	7	7	7	7	7	7
	8	4	7	7	7	4	7	3	5
	9	4	7	6	7	6	5	6	5
	10	1	1	1	1	1	1	5	1
7.	1	4	7	7	7	7	7	7	7
	2	3	7	7	7	4	7	7	3
	3	3	7	7	7	6	7	4	6

Q1	Q1	Q34	Q35	Q36	Q37	Q38	Q39	Q40	Q41	
Unit location	ID	Rate Num donning/doffing	Rate ICS clarity	Rate gender clarity (Male)	Rate gender clarity (Female)	Rate overall speech clarity	Rate noise reduction	Rate warning signals	Rate monitoring A/C noises	Rate weapons fire
	4	3	6	6	6	6	2	4	4	2
	5	6	7	7	7	7	7	7	6	6
	6	4	7	7	7	7	3	7	7	4
	7	3	6	6	6	6	6	7	6	6
	8	7	7	6	6	7	7	7	7	7
	9	4	6	6	6	6	4	6	4	5
	10	4	7	7	4	7	7	7	7	7
	11	7	7	7	7	7	7	7	7	4
	12	7	7	7	7	7	7	7	4	4
	13	4	7	7	7	7	4	7	4	6
	14	6	7	4	4	7	6	7	6	6
	15		7	7	7	7	7	7	3	6
	16	4	7	7	7	7	5	7	5	4
	17	5	5	5	4	5	5	5	5	5
	18	4	5	5	5	5	5	5	4	5
	19	2	7	7	6	7	3	7	3	3
	20	4	7	7	7	7	7	7	3	7
	21	4	7	7	7	7	7	7	2	7
	22	2	7	6	6	6	4	4	4	4
	23	4	7	7	7	7	7	7	7	6
	1	4	7	7	6	7	7	7	4	7
	2	6	7	6	6	7	2	6	7	2
	3	3	6	6	6	6	4	6	5	4
	4	2	7	6	6	7	7	6	3	4
	5	5	7	7	7	7	7	7	3	6

7.

8.

Q1 Unit location	Q1 ID	Q34 Rate Num donning/doffing	Q35 Rate ICS clarity	Q36 Rate gender clarity (Male)	Q36 Rate gender clarity (Female)	Q37 Rate overall speech clarity	Q38 Rate noise reduction	Q39 Rate warning signals	Q40 Rate monitoring A/C noises	Q41 Rate weapons fire	
8.	6		5	4	4	4	4				
	7	1	1								
	8	3	7	7	7	7	3	4	5	3	
	9	3	5	5	5	5	5	7	3	5	
	10	2	7	7	7	7	4	7	4		
	11	4	7	6	6	6	7	3	3	7	
	12	4	7	7	7	7	3	7	4	4	
	13	3	7	7	7	7	7	7	4	7	
	14	7	7	7	7	7	7	7	4	7	
	15	3	4	4	4	4	4	4	4	4	
	16	2	6	6	6	6	6	3	7	4	
	17	2	5	5	4	4	5	5	4	4	
	9.	1	5	7	6	6	7	6	5	5	
		2	4	7	7	7	7	7	7	7	7
		3	3	7	7	7	7	5	5	4	7
		4	7	7	7	7	7	6	6	6	7
		5	6	7	6	6	6	7	7	7	7
6		4	6	6	6	6	4	6	3		
7		3	7	5	5	5	6	6	6	6	
8		4	7	7	7	7	7	7	7	7	
9		3	7	7	7	4	6	6	6		
10		4	5	5	5	5	5	5	4	6	
11		3	4	4	4	4	4	4	4		
12		3	7	7	4	4	7	7	7	4	
13		3	7	7	4	4	7	7	7	4	

Q1	Q1	Q34	Q35	Q36	Q37	Q38	Q39	Q40	Q41
Unit location	ID	Rate	Rate ICS	Rate gender clarity	Rate overall	Rate noise	Rate warning	Rate monitoring	Rate
	Num	donning/doffing	clarity	(Male)	speech clarity	reduction	signals	A/C noises	weapons fire
9.	14	4	6	6	6	5	6	3	6
	15		4	4	4	4			
	16		7	7	7	6	6	3	
10.	1		7	7	7	6		4	5
Overall Total	N = 152	M = 3.7	M = 6.6	M = 6.3	M = 6.5	M = 5.6	M = 6.2	M = 4.7	M = 5.3
		SD = 1.3	SD = 1.0	SD = 1.1	SD = 0.9	SD = 1.5	SD = 1.4	SD = 1.5	SD = 1.4
		NR = 12	NR = 0	NR = 3	NR = 3	NR = 1	NR = 6	NR = 5	NR = 17

Q1 Unit location **Q41 ID Num** **Q42 Adverse effects of CEP** **Q43 Problems encountered while wearing CEP**

1.				
	1	0		Poor construction of CEP. The CEP needs to be more durable.
	2	0		Sometimes. Hot spots will develop inside the ear canal if plugs are inserted too far in.
	3	0		See above
	4	0		
	5			
	6	1	They are too fragile. I love the CEP. They take a little extra time to install but the benefits are worth it.	The cord catches on things and will dislodge from the ear. It is very difficult to install them in-flight.
	7	0		The only problem I have with the CEPs is that over time, extended mission over 2 hours, the CEPs tend to slop out of your ears. Also the center post tends to dig into your inner ear over long missions witch makes them uncomfortable.
	8	0		
	9	0		
	10			
	11	0		
	12	0		
	13	0		
	14	0		
	15	1	They are not built to handle serious wear and tear.	Once the wires are strengthened the device will be better
	16	0		No problems
	17	1	They are too fragile. Mine broke after roughly 25-30 hours of use and my ALSE technician was not trained or probably equipped to repair the items	During extended periods of wearing the CEPs they make the ear canal ache.
	18	0		
	19	0		Sore ear canals
	20	1	easy to lose	
	21	0		
	22	0		Continuous use (4 days in a row of 4-hour flights each day) results in ear canal sensitivity

Q43
Problems encountered while wearing CEP

Q1 **Q1** **Q42**
Unit location **ID** **Adverse effects of CEP**
Num

1.	23	0	
2.	1	0	It blocks out all aircraft noise.
	2	0	
	3	0	
	4	0	
	5	0	
	6	0	
	7	1	Foam tips fall apart after second wash and cannot stay compressed to insert in
	8	0	
	9	0	
	10	1	Caution/ warning tones were too loud. I am used to yellow foam earplugs while flying - caution tones just right
	11	0	
	12	1	The only problem that I have, is that they are made to flimsy. They need to be hardened some way. As I said, I'm on my third pair
	13	0	
	14	1	CEP offers better hearing of radio traffic. A wider range of ear plug portions and stronger cord connection to plug screw portion would greatly increase the lifetime of these plugs. Aviators are very rough on equipment. Build them to
	15	0	
	16	0	
	17	0	

I think the more durable parts are the way to go when making this final CEP because they go thru alot in the field and we need an inexpensive, more durable unit to provide to pilots to improve communications between aircrews, ground elements, ATC, & Commanders.
 Very delicate.

Make the foam stiffer.

In reference to monitoring noise generated by the aircraft, blocks out A/C noise and you can't hear engine and rotor noise.

Foam tips not durable after first wash.

The Velcro on the left wire will drive you nuts when it falls off the Velcro in the back of your helmet. The threaded stud needs to be flexible so as to conform to the inner ear canal.

Wires getting caught on other items strapped to my head or body. I have had CEPs for close to a year with no foam replacement. Mine are no good.

Mine have broken right at the ear foam, where the wire connects to the foam

Long wire caught on vest and pulled CEP out of ear. While trying to adjust this the wire broke

Q1 Unit location	Q1 ID	Q42 Adverse effects of CEP	Q43 Problems encountered while wearing CEP
2.	18	0	Wires easily caught on objects and pulled out of ears. When foam tips are hot and moist they will not stay collapsed long enough to insert into ear
	19	They broke within 75 hours, very uncomfortable. Maybe I was sized wrong.	
	20	0	Broke less than 75 hours and not comfortable
3.	1	0	See above
	2	1	There is a need for ICS performance. The CEP is a good interim fix, but it is fragile and easy to lose. It takes extra time to don helmet especially when using NVGs.
	3	0	
	4	0	
	5	0	
	6	0	
	7	1	I've gotten spoiled and hate flying without them
	8	0	
	9	0	
	10	1	They are not very durable overall
	11	1	Tones are too loud
	12	0	Advisories too loud
	13	0	Doesn't stay in my ear well
	14	0	Ear piece wires seem way to flimsy-they break at ear piece commonly. I was very careful not to put undo pressure/stress on system, and after 100 hours of flying, one wire reached it's useful life and broke at ear piece.
	15	0	
	16	1	
	17	0	

I no longer use CEP for two major reasons: 1. They are too uncomfortable. 2. To adjust the ICS to hear radios and cockpit communication, the aircraft caution and warning audio becomes entirely too loud.

Q1 Unit location	Q1 ID	Q42 Adverse effects of CEP Num	Q43 Problems encountered while wearing CEP
4.	1	1	It slides out too easily. Need smaller but more snug earplugs.
	2	0	
	3	0	
	4	1	
	5	0	
	6	0	
	7	0	
	8	0	
	9	0	
5.	1	0	The foam changed after washing. It no longer holds its reduced size to They fall out. Difficulty getting them to stay in ear canal and some ear canal pain because of pushing them in hard so they will stay in when donning helmet. The speaker end of the wires would be more comfortable if they were smaller, or if they were formed and fitted for each ear. Some ear pain is associated with the insert but will change to a smaller size when available. See #12 No problems No problems encountered so far. Snags when putting the helmet on and taking it off.
	2	0	
	3	0	
	4	0	
	5	0	
	6	0	
	7	1	
	8	0	
	9	0	
	10	0	
	11	0	
	12	1	
	13	0	
	14	0	

Q1 Unit location	Q1 ID Num	Q42 Adverse effects of CEP	Q43 Problems encountered while wearing CEP
5.	15	0	
	16	1	CEP make caution/warning signals way to loud.
6.	1	1	The CEPs were not made durable enough for ARMY aviation. The wires, the tips, and the harness assemblies have all had major failures within the first 3 months. Some tips broke on initial issue to the user, causing what I think should be a QDR issue.
	2	0	
	3	0	
	4	0	
	5	0	
	6	0	
	7	0	
	8	0	The warnings are extremely loud but that is not a CEP problem.
	9	0	Wire laying on outer ear causes hot spots, wire is too long and gets caught in shirt, seat belts, vest, etc.
	10	1	The only problems I had were noted on the cover sheet (1 and 3). Wire breakage at transducer and screw tip breaking off. They pull out when donning, extremely uncomfortable, can't hear as well, does not reduce noise as well.
7.	1	0	
	2	1	Only that the CEPs would sometime operated intermittently, but nothing significantly
	3	0	
	4	0	
	5	0	
	6	0	
	7	1	Aircraft audio tones extremely loud.
	8	0	The only problem I have is the wore getting caught and pulling on the earplugs when I turn my head
			The problems I have encountered you have already addressed.

Q1 Unit location	Q1 ID	Q42 Adverse effects of CEP Num	Q43 Problems encountered while wearing CEP
7.	9	0	Problem getting the right size foams.
	10	0	Wire pulls CEP out of ear.
	11	0	All problems were addressed in the questionnaire.
	12	0	I had a wire break at the CEP when removing my helmet. I really like them.
	13	0	The wires tend to snag on harnesses and connector within the cockpit.
	14	1	The wire harness is difficult to lay around the ear properly. It will cause some minor discomfort if harness is not properly routed around the ear.
	15	0	
	16	0	Forgetting to unhook before doffing.
	17	0	Don't use. Don't like it.
	18	0	Better quality
	19	0	
	20	0	Slight discomfort after 3-4 hour flights. Ears get a bruised feeling occasionally.
	21	0	Only problem is the slight "hot spot" mentioned in Q26.
	22	0	
	23	0	
8.	1	0	Availability of parts-we do not have enough helmets or CEPs. Sometimes the wires can get over my ear and between earcups and cause discomfort.
	2	0	None that have not been discussed earlier.
	3	0	
	4	0	
	5	0	The foam inserts in the helmet push on the CEP ear plugs which cause ear pain.
	6		
	7		
	8	0	No major problems.

Q1 Unit location	Q1 ID	Q42 Adverse effects of CEP Num	Q43 Problems encountered while wearing CEP
8.			
	9	0	My left ear canal is now tender from everyday use, resulting in just placing the CEP device near my left ear for now.
	10	1	Caution warning and advisory signals are always full volume. I do not wear CEPs during contact training for this reason.
	11	0	If the ear piece were smaller, it would be more comfortable. If the foam plugs were more firmer, they would be easier to insert.
	12	1	Foam inserts do not last very long. Wires are prone to breakage at the
	13	0	I cannot use the foam earplug without significant modifications. I always had to use the rubber triple flange earplugs, due to problems fitting the foam ones. The foam ones wear out too fast and pose a problem in replacement.
	14	0	I do not like wearing earplugs so my opinion is biased.
	15	1	Overall clarity/noise reduction was not improved only amplified. The CEP does not correct deficiencies in the OH-58D ICS system.
	16	1	It takes some time to get used to. Its not as easy as just putting on a helmet. However after it is used for a while you get used to donning and doffing procedure and the sequence you must go through to get it on.
	17		
9.			
	1	0	Have not worn CEP long enough.
	2	0	
	3	0	Wax in the plug canal, broken wire right plug, uncomfortable after a period of time.
	4	0	
	5	0	
	6	0	
	7	0	
	8	0	With doors off aircraft has significant noise.
	9	0	
	10	0	CWA too loud!
	11	0	

Q1 Unit location	Q1 ID	Q1 Num	Q42 Adverse effects of CEP	Q43 Problems encountered while wearing CEP
9.				
	12	0		Donning the helmet with CEP can't be done with flight gloves on.
	13	0		
	14	0		
	15	0		
	16	0		
10.				
	1	0		With all noise/radio/ICS levels in a comfortable range a CWA message/tone in an OH-58D is extremely loud and annoying.

Overall Total N = 152 Yes = 27
 No = 118
 NR = 7

Q1 Unit location	Q1 ID Num	Q44 General comments about CEP	Q45 Rate overall value of CEP
	1	The need to be more accessible and should be fielded to all helicopter pilots	7
	2	Great! Use to wear earplugs occasionally resulting in hearing difficulty in the cockpit. I wear CEPs all the time now. I hear perfectly and I am also protected from outside noises.	7
	3	Good noise attenuation during gunnery but needs to be a little more durable.	5
	4	No big problems yet. Haven't flown with them much yet.	5
	5	The benefits greatly outweigh the time and difficulty putting them on.	7
	6	Very nice increase in hearing ability of ICS, radios. The caution/warning tones are excessively loud now.	7
	7	Overall CEPs are a valuable asset. They only have a few minor problems but overall they improve our ability to accomplish out mission.	7
	8	I would rather the original problem be fixed instead of giving me another piece of equipment. Fix the ICS problem and throw out your temporary fix. While you are at it give me a helmet with active noise cancellation. The computer in the aircraft will tell me of any problems prior to me hearing any change in engine noise anyway.	7
	9	They are great - you just really need to take care of them.	7

Q1 Unit location	Q1 ID	Q44 General comments about CEP	Q45 Rate overall value of CEP
1.	10	Slightly better hearing protection, slightly better quality audio. Benefits aren't really worth the hassle of use. Plugs leave ear canals feeling they have been bored out with a cleaning brush.	3
	11		7
	12	Need to be more rugged	7
	13		6
	14	Bulk of the transducer	7
	15	They significantly increase the clarity of radio traffic	7
	16	EXCELLENT! Need to field all units, back fill others. This has improved crew safety and communications immeasurably	7
	17	ICS is definitely better, however the fragility of the systems lends itself to breaking	3
	18		7
	19	Definitely needed device. Just come up with a better design.	7

Q1 Unit location	Q1 ID Num	Q44 General comments about CEP	Q45 Rate overall value of CEP
1.	20	This is one of the Army's best ideas. The radios in the OH-58D(I) are hard to hear without the CEPs. The CEPs help dramatically in the ability to hear and comprehend the radio traffic. You don't have to focus all your attention on the radios with the CEPs in. This is a great product.	7
	21	We absolutely need them! They could be a little louder	7
	22	The entire Army should have them	7
	23		6
2.	1	The CEP is long overdue. Excellent!! My first CEP broke but I was able to acquire another by someone leaving and I have taken better care of it.	7
	2	Excellent	7
	3	I think there is a world of difference with the CEP. Noise is reduced and clarity over the radio is so much better.	6
	4	Getting to the point of too many wires on the head: helmet, ODA, goggles and neck strap, CEP and lip light.	7
	5	Other than the wire getting caught on the vest and other equipment, I thought the CEPs were a great improvement over just the helmet. I couldn't wear yellow ear plugs because I could not hear at all. This is a great improvement.	7

Q1 Unit location	Q1 ID	Q44 General comments about CEP	Q45 Rate overall value of CEP
2.	6	Much easier hearing crew members as well as the radios.	7
	7	Great product. Continue to improve and field to everyone.	7
	8	I used to wear yellow foam earplugs all the time. Once I started using CEPs I got addicted to being able to understand the radios. But they are so painful after prolonged periods that now I don't use any additional hearing protection. But I still don't use them except for gunnery.	5
	9	Commo is much more easily understood while using CEPs, however if you use CEPs for 50 more hours and then revert back to yellow earplugs, you can have almost nothing!	7
	10	Significantly improved cockpit communication	7
	11	Great device but need more replacement foam inserts!	7
	12	I like them a lot. The difference between not wearing them and wearing them is night and day.	7
	13	Foamy does a good job with noise levels. It is a pain in the ass by getting caught where vest and collar meet. It would pull the CEP slightly from the ear. Plus the CEP is cheaply built. The cost is extremely high.	6
	14		6

Q1 Unit location	Q1 ID Num	Q44 General comments about CEP	Q45 Rate overall value of CEP
2.	15	After using CEPs exclusively and then having them break, I had to go back to yellow ear plugs with great reduction in hearing performance. I had gotten very used to being able to hear communications clearer.	6
	16	CEPs are great! I was really upset when mine broke. Can't wait to get another pair.	7
	17		6
	18	Good item if wires and foam tips are improved. Use same material as yellow foam earplugs?!	7
	19	Though not comfortable, I could definitely hear all radios and ICS better	
	20	I hope I never have to go back to flying w/out CEPs or something like them. The benefits far exceed the discomfort I have to put up with. If they were made more comfortable they would be better yet.	7
3.	1		7
	2	I like it. Need more durable product	7
	3	Sometimes it gets hung up when turning head which could distract pilots at critical times during flight. It enhances mission performance when you can actually hear what is being transmitted over the ICS and radios	7

Q1 Unit location	Q1 ID	Q44 General comments about CEP	Q45 Rate overall value of CEP
3.			
	4	A/C needs voice activated ICS due to work load and the need for cockpit communications.	7
	5	The CEP works great but it is a bit too fragile the wires are too weak and the location needs to be moved	7
	6	It has been a pleasure, especially when flying from the right seat. It has added a significantly wider volume range. I can turn a radio volume knob all the way down and still adequately hear and understand speech on that radio. I never advocate crewmembers pulling their ICS pins, and do not have to when utilizing the CEP. It makes flying with doors off much more pleasurable.	7
	7	Viable product. I endorse it	7
	8	These earplugs seem to me a bandaid over the larger problem. Rather than investing any more money, time or equipment on these earplugs how about putting some better ICS boxes in the aircraft. The aircraft at FT Rucker had VOX boxes in the aircraft. Those boxes were more than adequate. I used both my SPH-4B and HGU-56 with earplugs with the VOX box and had plenty of volume in all flight modes.	2
	9	After getting used to them I have found them to be an outstanding product	6
	10		7
	11	Love them!	7
	12	Works well can hear radios well reduces aircraft noise	6

Q1 Unit location	Q1 ID	Q44 General comments about CEP Num	Q45 Rate overall value of CEP
3.	13	Great. Help hearing co-pilot over noise of aircraft/radios. I would consider this essential to good cockpit crew co-ordination and communication. This is common to everyone I know who uses these plug phones. Also, Also, I never pulled the CEP's from ears by the wires. Please provide durable plugs ASAP.	7
	14	Excellent product!! I do not think I could fly without it now.	7
	15		5
	16	Due to the task load of the CPO in the OH-58D, the CPO must use "hot mic" on the ICS. This degrades the level of audio clarity. This aircraft must have "voice activated" (VOX) ICS, as a minimum at the CPO station. This will greatly improve the communication clarity of the aircraft. I have used these at Ft rucker and was well pleased with them.	2
	17		
4.	1	The communications clarity is excellent - the improvement is worthwhile. We need just minor fixes.	6
	2	I love them. Try to improve.	7
	3	Even with the added time and some discomfort, the CEPs are far superior to the older helmets.	7
	4	Don't like it.	1

Q1 Unit location	Q1 ID Num	Q44 General comments about CEP	Q45 Rate overall value of CEP
	5	Overall it is a good system but it needs to have a more durable wire and connection. Must be a stronger wire.	6
	6	It looks goofy with the large ear cuffs.	5
	7	I like the CEP much better then the old SPH-4 but the shape leaves a little to be desired. The SPH-4 was a better looking helmet.	7
	8		6
	9		7
5.	1	CEPs work well in clarifying speech and being able to communicate in the cockpit.	7
	2		5
	3	Extend the length of the helmet chin strap to ease helmet donning with earplugs installed and shorten slightly the length of the tube inside the foam on the plug itself to ease ear canal pain. The CEP has greatly increased the safety of flight in the OH-58D. Do not take it away. I can hear the radios and my co-pilot at all time now.	7
	4		7

Q1 Unit location	Q1 ID Num	Q44 General comments about CEP	Q45 Rate overall value of CEP
5.	5	They are awesome! The ability to hear everything is so much better with these CEPs I can live with a little discomfort. The safety benefit of being able to hear the other pilot is also a giant plus. Doors off flying is so much better now.	7
	6	Just purchase the BOSE headsets and put them into our helmets, it's a superior proven product. Good idea but poor design! Too cumbersome when doing exercises. Cannot put helmet on and go. You are required to "fiddle with it".	5
	7	Makes a big difference in hearing radios and internal communications.	7
	8	The ARMY has finally purchased a piece of equipment that not only is functional, but doesn't burden the soldier with its use. Thanks!	7
	9		7
	10	The CEP has improved the ICS systems clarity and radio clarity 100%. Especially with doors off. I think the CEP is a good improvement for OH-58D pilots.	7
	11	An excellent system that improves ICS communication and reduction in noise. I would not want to fly without the CEP after flying with it.	7
	12		7

Q1 Unit location	Q1 ID Num	Q44 General comments about CEP	Q45 Rate overall value of CEP
5.	13	All ICS and radio communications is significantly better. Crew coordination is better - radio management is much easier since the pilot doesn't have to have all radios turned all the way up in order to hear anything. The number of "say again" and "what did you say" have significantly decreased.	7
	14		6
	15		7
	16	Correct piece of equipment.	7
6.	1	Reorder problem- PCS of pilots caused severe shortage of CEPs available to new arrivals. CIF was making ALSE turn in the helmets as a complete kit with CEP installed. Can't get thru normal supply but as GSA item causing problem due to lack of funds. Once I punch a hole thru the back of the earcup black plastic liner, that condemns the helmet for turn-in procedures - again causing a reorder problem for the ALSE maintainers. I would like to see an improved earphone assembly, such as the BOSE system in the HGU-56/P instead of an additional item to be maintained, taught, installed, and stocked. 60% of the original pilots have gone and new pilots do not have CEPs	6
	2	I like it. It works well.	7
	3	I would like a more durable and sturdy product. I am always afraid of breaking them.	6
	4		6

Q1 Unit location	Q1 ID Num	Q44 General comments about CEP	Q45 Rate overall value of CEP
6.	5	Great system. Just make wiring system more durable (most pilots wash their earplugs with flight suit).	7
	6	Very, very fragile.	6
	7	They are great but break easily.	7
	8	Greatly improves volume levels in the OH-58D, sometimes the FM radios are impossible to hear without CEP.	6
	9	Great idea but poor design in durability.	7
	10	Very little. I don't like it.	1
7.	1		7
	2	I think it's a great product or piece of equipment that is very much needed for the OH-58D(I)	7
	3	Although there are some minor problems with the CEP, it has significantly enhanced my ability to communicate within the cockpit and over the radios. I have absolutely no desire to give up my CEP and go back to my old helmet system	7

Q1 Unit location	Q1 ID Num	Q44 General comments about CEP	Q45 Rate overall value of CEP
	4	It would have been nice to have an ICS setup so one would not need a CEP. I still have a difficult time understanding what is said because of the static.	5
	5		7
	6	I do not want to fly without my CEP. Since wearing the CEP I can now hear everything in the cockpit. My overall rating for the CEP is excellent.	7
	7		6
	8	Very good device.	7
	9	I like them	7
	10		7
	11	Outstanding, even with the minor problems.	7
	12	Great addition to aviation flight aids even with the minor problems. We need this device.	7

Q1 Unit location	Q1 ID	Q44 General comments about CEP	Q45 Rate overall value of CEP
			7
	13	I refuse to fly without them. It makes the job much easier. It's really obvious when flying with a pilot w/o the CEPs. I'll understand a radio message while the other pilot is saying "say again".	7
	14	It is a great idea! I use the CEP always. If the speaker was smaller and the wire stronger it would be a better product. Also the foam plug portion would be better if it held its form when compressed like yellow foam plugs do.	7
	15	Great system, however the wire keeps breaking from the ear plug.	7
	16	Drastic improvement over using foam ear plugs. Clear communications. You don't have to turn radios up full blast. The word is a hassle and time consuming but I still wouldn't be caught without my earplugs. Suggestion: make two connectors, one in each earcup. This will eliminate the cord catching on seatbelt and goggles.	7
	17		4
	18		5
	19	Great idea - Needs a better design. We already have up to 3 wires hanging off our helmets. Adding another wire with the CEP does not help things.	6
	20	I like them! Make the plastic tube a bit shorter and more flexible.	7
	21	Really improves the ability to keep out outside noise from the aircraft.	7

Q1 Unit location	Q1 ID Num	Q44 General comments about CEP	Q45 Rate overall value of CEP
7.	22	They make hearing great. So much better than flying with earplugs but they are a hassle to put on. I only used them on real mission and just tolerated the lack of being able to hear the rest of the time. Bell needs to fix the aircraft so we can hear. CEPs need to be more comfortable like the ones the NASCAR drivers use.	5
	23	These have completely revolutionized aviation. It is terrific. The ability to hear everything is a critical part of aero-scouting and this has enhanced it greatly. I love them and I pity anyone without them.	7
8.	1	Alignment of goggles, they don't always align with my eyes, if we could get dual adjusting goggles - this would solve that	7
	2	I like the system, but the problem I have found is if I use plain foam earplugs, I cannot hear the ICS as well. If I wear the CEP everything sounds fine. Another concern of mine is that I hear a lot more acft noise wearing the HGU-56 and CEP system.	5
	3	Improves the internal and external communications. Allows me to monitor not only the radios but also copilot/student communication.	6
	4	Good idea, ergonomically not the best product.	6
	5	Great system.	6
	6	Do not use.	

Q1 Unit location	Q1 ID Num	Q44 General comments about CEP	Q45 Rate overall value of CEP
8.	7		1
	8	I like them. They improve hearing significantly!	7
	9	Great device. You may not have it back.	5
	10	Worthwhile.	6
	11	Concerned about lack of maintenance or replacement. I will be seriously disappointed when my CEPs are no longer serviceable and there will be no replacement.	
	12	Good compromise/ low cost alternative to actually fixing the OH-58D ICS system.	7
	13	I would like to see rubber styles. They would last longer and fit easier. I love the increased audio clarity of the CEP, and I feel it is a must in the OH058D. However, it breaks too easy and the foam sizes are too restrictive and wear out too fast.	6
	14	Great addition especially in the OH-58D (I) Kiowa Warrior.	7
	15	I have had experience flying/testing with an Active Noise Reduction system. I prefer that system because it removed or reduced unwanted noise.	3

Q1 Unit location	Q1 ID Num	Q44 General comments about CEP	Q45 Rate overall value of CEP
8.	16	Aviation is a noisy environment so most people wear earplugs on the flightline during pre-flight, etc. and this requires removing one set of plugs and replacing them with others. I like being able to hear, but the donning/doffing procedure stinks. It pulls out a lot which I can't stand. After a while you rig it so this doesn't occur. A lot of people do not use it for this reason. But in the end when all on correctly - hearing is great! It does reduce noise level but it is more of a pain to maintain and use in a time critical environment.	5
9.	17		3
	1		6
	2	This is the absolute best thing that R&D has added to the aircraft-Pilot interface I have seen. I can hear everything I need to without sacrificing my inner ear. The safety margin has been greatly increased now that ICS is clear and concise. Radio traffic is easily monitored. It is worth the slight amount of discomfort. I would personally buy my own set if not issued.	7
	3	Overall much better.	7
	4	Best thing to come along for S8D's, increases ability to hear everything.	7
	5	The speaker assembly should be smaller so it doesn't rub on the ear cup foam. The size of it causes extra pressure on ear canals. Suggest a molded type ear plug such as those used with race car helmets.	7
	6	I like the system despite the added steps. I can now actually turn down the volume on the ICS control.	6

Q1 Unit location	Q1 ID Num	Q44 General comments about CEP	Q45 Rate overall value of CEP
9.	7		6
	8	Improvement.	7
	9		6
	10		5
	11		5
	12	Why didn't somebody think of this before?	7
	13	Infinitely better.	7
	14		6
	15	Generally do not like HGU-56. Poorly engineered. Should not have to have modification.	
	16		7

Q1 Unit location	Q1 ID	Q44 General comments about CEP	Q45 Rate overall value of CEP
10.	1	Love them! Keep improving them and get them in the supply system immediately. One just must figure out which order to put on the equipment, goggles, CEP, helmet	7

Overall total N = 152
Mean = 6.3
SD = 1.3
NR = 5

Reference

Murphy, B.A., and Mozo, B.T. 1999. Flight Evaluation of the Communications Earplug (CEP) in the OH-58D Helicopter. (Part 1) Fort Rucker, AL: U.S. Army Aeromedical Research Laboratory. USAARL Report No. 2000-04

Appendix.

**EVALUATION OF THE COMMUNICATIONS EARPLUG IN THE
OH-58D HELICOPTER ENVIRONMENT**

INSTRUCTIONS: You have been asked to wear the Communications Earplug (CEP) in conjunction with your aviator helmet during your daily mission to evaluate its operational effectiveness and comfort. Please complete the following questionnaire. Most questions are self-explanatory with room for comment. Please try to be as precise as possible when making your comments. Some questions will require you to mark on a continuum between extremes. Your responses should be indicative of the strength of your feelings. **Note:** Please bear in mind that all comparison questions are between the helmet you normally used in the past and the CEP.

Personal data:

1. Unit location: _____
2. Today's date: _____
3. Sex: M F
4. Experience as an aviator: _____ years. Approx. No. flight hours: _____
5. No. flight hours wearing HGU-56/P helmet (prior to CEP installation): _____
6. No. flight hours wearing CEP: _____
Is the CEP still functioning properly? Yes No
If no, describe the malfunction _____
7. CEP foam tip size: Standard Slim Short Combination
8. Seat position during most flights: _____
9. Do you have a waiver or information only letter (IO) for a hearing loss?
 Yes No Not Sure If Yes, how long have you been on waiver? _____
10. Do you normally wear eyeglasses when flying? Yes No
If Yes, what type temples are on the glasses you normally wear?(examples: bayonet temples, wire frames etc)

Personal Hearing Protection:

11. Prior to CEP installation, did you wear earplugs in conjunction with your flight helmet?
 Yes No If No, skip next question.
12. Did you frequently experience discomfort with your earplugs? Yes No
If Yes, how long does it take before you feel the discomfort _____
Describe the discomfort (example: itchiness, pain etc) _____
13. Prior to CEP installation, did you frequently experience discomfort with your helmet while flying?
 Yes No
If Yes, how long does it take before you feel the discomfort? _____
Describe the discomfort (examples: hot spots, headache etc) _____

Fitting:

- 14. Have you experienced any difficulty in fitting the CEP? Yes No
If Yes, please explain _____

- 15. Was there any discomfort when inserting the earplug? Yes No
If Yes, please explain _____

- 16. Do the wires pull on the CEP when turning your head? Yes No
If Yes, please explain _____

- 17. Does the CEP move or slip out of the ear during flight? Yes No
If Yes, please explain _____

- 18. Wire lengths of the CEP: SHORT wire was too short too long just right.
 LONG wire was too short too long just right.
- 19. Were there any problems associated with CEP during night flights? Yes No
If Yes, please explain _____

- 20. Does the CEP catch on other equipment or interfere with job performance? Yes No
If Yes, please explain _____

- 21. Is the orientation or location of the connector convenient? Yes No
If No, where would be your preference on the helmet _____

- 22. After how many flight hours did you clean or change foam tips? _____
- 23. How did you clean foam tips? _____
- 24. Was there a problem of wax build-up in the CEP foam tip? Yes No

Comfort:

- 25. Does the CEP cause any discomfort in your ear canals (itching, pain etc)? Yes No
If Yes, was it :_____ : _____ : _____ : _____
 Mildly Moderately Extremely
 uncomfortable uncomfortable uncomfortable
- 26. Does the CEP cause any discomfort to your external ear? Yes No
If Yes, please describe _____

- 27. Are there any hot spots associated with CEP? Yes No
If Yes, please explain _____

28. If you experienced discomfort with CEP during your flight, when did you first notice the discomfort?
Please circle the appropriate time below.

1/2 hr 1 hr 1-1/2 hrs 2 hrs 2-1/2 hrs 3 hrs 3-1/2 hrs 4 hrs

29. With respect to overall fit and comfort, compare the CEP device with your personal helmet.

Significantly Better	Moderately Better	Slightly Better	Same	Slightly Worse	Moderately Worse	Significantly Worse
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Donning and Doffing:

30. Does the addition of the CEP result in differences in the helmet donning procedure?

Yes No If Yes, please explain _____

31. Does this extra step pose a significant problem in completing your mission? Yes No

If Yes, please explain _____

32. Do you have problems donning/doffing the CEP with gloves on? Yes No

If Yes, please explain _____

33. If you forgot to disconnect the CEP when doffing, was there any discomfort or difficulties when the CEP was removed? Yes No

If Yes, please explain _____

34. With respect to donning/doffing, compare the test device to your personal helmet.

Significantly Better	Moderately Better	Slightly Better	Same	Slightly Worse	Moderately Worse	Significantly Worse
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35. Rate the difference in ICS speech clarity/understanding when compared to your personal helmet.

Significantly Better	Moderately Better	Slightly Better	Same	Slightly Worse	Moderately Worse	Significantly Worse
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36. Rate the difference in speech clarity/understanding of personnel based on gender of the talker when compared to your personal helmet.

Male Voice

Significantly Better	Moderately Better	Slightly Better	Same	Slightly Worse	Moderately Worse	Significantly Worse
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Female Voice

Significantly Better	Moderately Better	Slightly Better	Same	Slightly Worse	Moderately Worse	Significantly Worse
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37. Rate the difference in overall speech clarity/understanding when compared to your personal helmet.

Significantly Better	Moderately Better	Slightly Better	Same	Slightly Worse	Moderately Worse	Significantly Worse
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Noise Reduction/Attenuation:

38. With respect to reducing noise levels at your ears, compare the CEP to your personal helmet.

Significantly Better	Moderately Better	Slightly Better	Same	Slightly Worse	Moderately Worse	Significantly Worse
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39. With respect to allowing you to hear navigational and caution/warning signals, compare the CEP to your personal helmet.

Significantly Better	Moderately Better	Slightly Better	Same	Slightly Worse	Moderately Worse	Significantly Worse
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40. With respect to your ability to hear and monitor noise generated by the aircraft, compare the CEP to your personal helmet.

Significantly Better	Moderately Better	Slightly Better	Same	Slightly Worse	Moderately Worse	Significantly Worse
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41. With respect to reducing noise levels at your ears during weapons firing, compare the CEP to your personal helmet.

Significantly Better	Moderately Better	Slightly Better	Same	Slightly Worse	Moderately Worse	Significantly Worse
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General Issues:

42. Were there any adverse effects of CEP performance? Yes No
If Yes, please _____

43. Please elaborate on any problems you may have encountered while wearing the CEP.

44. General comments about your experience with the CEP.

45. Based on your flying experience, rate the overall value of the CEP when compared to your personal helmet.

Significantly Better	Moderately Better	Slightly Better	Same	Slightly Worse	Moderately Worse	Significantly Worse
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