



Chapter 2
Regional Perspective

2.0 REGIONAL ASSETS AND REQUIREMENTS

2.1 Planning Criteria and Definitions

The major aspect of the Existing Conditions and Needs Assessment is the determination of the adequacy of the physical plant at each installation. This task was accomplished through field investigations, review of existing documentation, and comparison of existing assets to current planning, design, and airfield safety criteria.

To organize the evaluation process, facilities and infrastructure were characterized in three broad categories: (1) airfield pavements, (2) aircraft maintenance facilities, and (3) ancillary airfield assets.

2.2 Condition of Existing Assets

Based on the Navy's Shore Facilities Planning Manual (11010.44E), the overall evaluation of each aviation-related facility in the Mid-Atlantic Region was weighed against criteria, including its functional use, size, location, health and safety concerns, and physical condition. Facility adequacy was ranked as: (1) adequate, (2) substandard, or (3) inadequate. The definitions for each ranking are as follows:

- **Adequate** indicates that the facility satisfies the intended functional use and is in good physical condition;
- **Substandard** indicates that the facility has deficiencies but could be improved to meet the requirements of its intended function within a life-cycle cost less than the cost of new construction; and

- **Inadequate** indicates that the facility is overcome by constraints and deficiencies, and that it cannot be improved at a cost less than that of new construction.

2.3 Loading and Requirements

The requirements for most aviation-related facilities are based on aircraft loading, mix, and operational tempo. The NAVFAC P-80, Facility Planning Criteria for Navy and Marine Corps Shore Installations was used to generate the requirements for this Plan. The existing and projected aircraft loading for the Mid-Atlantic Region and the historic and projected volume of air operations for each of the installations is presented in Tables 2-1 and 2-9.

2.3.1 Aircraft Loading

Between 2003 and 2015, it is estimated that the Mid-Atlantic Region will experience a net increase of 13 aircraft (see Table 2-1). This represents a 3.3 percent increase. The most significant change in the aircraft mix and loading occurs within the rotary-wing community. This community will receive 92 MH-60S Multi-Mission Helicopter upgrades that will replace Navy CH-46, and H-3 helicopters. The Mid-Atlantic Region will also receive 120 F/A-18E/F Super Hornet aircraft that replace F-14 Tomcat aircraft as well as older models of the F/A-18 Hornet aircraft.

**Table 2-1 Mid-Atlantic Region Composite Aircraft Type
And Loading 2003 versus 2015¹**

Aircraft Designation	Aircraft Loading (1)	
	2003	2015
Propeller Aircraft		
E-2C	34	34
C-2A	17	17
C-12	5	6
T-34	6	6
Subtotal Propeller Aircraft	62	63
Jet Aircraft		
F-14	98	0
F/A-18 Hornet	152	93
F/A-18 Super Hornet	0	120
Subtotal Jet Aircraft	250	213
Rotary-Wing Aircraft		
HH-60H	8	8
CH-46	23	12
H-3	18	0
MH-60S	15	94
MH-53	15	15
Subtotal Rotary-Wing Aircraft	79	129
Transport Aircraft		
C-9	5	0
C-40A	0	4
Subtotal Transport Aircraft	5	4
Total	396	409

¹ Excludes transient aircraft.

2.3.2 Historical and Projected Air Operations Data

Historical air operation records capture the operational tempo at an air installation. Operational tempo, along with aircraft loading and mix, contributes to the justification and needs assessment of aviation-related facilities. Projected air operations identify trends and provides justification for aviation-related facilities.

From a historical air operations perspective, NAS Oceana and NALF Fentress are the busiest airfields in the Mid-Atlantic Region with Chambers Field a close third. However, when projecting air operations to the year 2015, Chambers Field becomes the busiest airfield in the Mid-Atlantic Region followed by NAS Oceana and NALF Fentress. Table 2-9 at the end of this section shows a comparison of historical and projected air operations within the Mid-Atlantic Region.

2.3.2.1 Historical Air Operations Data

2.3.2.1.1 NAVSTA Norfolk Chambers Field

Squadrons stationed at Chambers Field perform approximately 100,000 to 120,000 operations annually of which approximately 2,000 operations are associated with the passenger and air cargo terminal. Historical and calendar year 2000 annual operations data obtained from NAVSTA Norfolk (Chambers Field) traffic activity reports are shown in Table 2-2.

Table 2-2 Annual Airfield Flight Operations 1991-2000 NAVSTA Norfolk (Chambers Field)²

Calendar Year	Navy/Marine	Other Military	Air Carrier	General Aviation	Total
1991	123,165	8,475	2,937	12,359	146,936
1992	137,781	6,585	2,138	9,469	155,973
1993	103,305	5,674	2,552	9,702	121,233
1994	82,701	6,244	2,501	8,329	99,775
1995	80,026	6,828	1,621	9,708	98,183
1996	74,382	6,920	8,473	22,134	111,909
1997	74,783	7,793	7,214	18,327	108,117
1998	100,887	8,078	1,902	8,754	119,621
1999	87,318	7,092	1,908	6,455	102,773
2000	83,192	6,199	6,662	15,612	111,665

2.3.2.1.1.1 Rotary-Wing Activity

During calendar year 2001, NAVSTA Norfolk (Chambers Field) recorded 36,073 helicopter flight operations including takeoffs, landings, touch-and-gos, and approaches. (See table 2-4) Rotary-wing squadrons at Chambers Field perform a range of logistical training operations during the day and night. Training operations are performed over the airfield, Chesapeake Bay, local training areas to the west, and the Atlantic Ocean. A flight operation refers to any takeoff or landing at NAVSTA Norfolk (Chambers Field). The takeoff and landing may be part of a training maneuver (or pattern) associated with a departure or arrival of an aircraft to or from defense-related airspace. The approved flight operations at Chambers Field are described next:

² Navy 2000a (Environmental Assessment for the Homeporting of MH-60R/S on the East Coast of the U.S. dated May 2002)

A breakdown of rotary-wing flight operations by type and number is shown in Table 2-3.

- a. Departure. An aircraft takes off to a local training area, a non-local training area, or as part of a training maneuver (i.e., touch-and-go).
- b. Arrival. An aircraft lines up along the flight track on the runway/helipad centerline. The aircraft descends gradually, comes to a full stop, and then taxis off the runway/helipad.
- c. Touch-and-Go. An aircraft lands and take off on a runway without coming to a complete stop. After touching down, the pilot immediately goes to full power and takes off again. The touch-and-go actually is counted as two operations – the landing is counted as one operation and the takeoff is counted as another.
- d. Field Carrier Landing Practice (FCLP). An aircraft practices simulated carrier landings. FCLPs are required training for all pilots before landing on a carrier. The number of FCLPs performed is determined by the length of time that has elapsed since the pilot's last landing on a carrier.
- e. Field Deck Landing Pattern (FDLP). Simulated deck landings/patterns conducted ashore by helicopters. FDLPs are required training for all FRS pilots prior to conducting shipboard landings.
- f. Ground-Controlled Approach (GCA) Box. A radar or “talk-down” approach directed from the ground by Air Traffic Control (ATC) personnel. ATC personnel provide pilots with verbal course and glideslope information, allowing them to make an instrument approach during inclement weather.

Table 2-3 Calendar Year 2001 Chambers Field Rotary-Wing Aircraft Flight Operations

Operation Type	HH-60H			CH-46D			CH-46E			
	Day	Night	Total	Day	Night	Total	Day	Night	Total	
Departure	1,320	120	1,440	3,025	1,018	4,043	325	168	493	
Arrival	1,320	120	1,440	3,025	1,018	4,043	296	197	493	
Touch and Go	-	-	-	4,450	-	4,450	-	-		
FDLP	-	-	-	4,450	-	4,450	280	-	280	
GCA Box	296	240	536	508	356	864	480	-	480	
Subtotal	2,936	480	3,416	15,458	2,392	17,850	1,381	365	1,746	
Operation Type	MH-53E			H-3			Total Annual Operations			
	Day	Night	Total	Day	Night	Total		Day	Night	Total
Departure	3,380	85	3,465	1,550	231	1,781		9,600	1,622	11,222
Arrival	3,380	85	3,465	1,550	231	1,781		9,571	1,651	11,222
Touch and Go	452	-	452	216	25	241		5,118	25	5,143
FDLP	400	180	580	-	-	-		5,130	180	5,310
GCA Box	340	356	696	376	224	600		2,000	1,176	3,176
Subtotal	7,952	706	8,658	3,692	711	4,403	Total	31,419	4,654	36,073

2.3.2.1.2 NAS Oceana

Pilots performed 207,722 air operations in Calendar Year 2000 at NAS Oceana. These numbers were calculated using the Naval Aviation Simulation Model (NASMOD), which simulates an “average” year based on a set of assumptions derived from various inputs, including the number and type of aircraft, squadron training syllabus, other airspace users, designated flight tracks, air traffic control procedures, and schedules. Table 2-4 presents the modeled 2000 aircraft operations at NAS Oceana.

Table 2-4 Projected Annual Operations at NAS Oceana (2000)³

	Day (7:00am-10:00pm)	Night (10:00pm-7:00am)	Total (Day and Night Only)
F-14 Tomcat			
Departures	15,936	1,522	17,458
Arrivals	15,333	2,096	17,429
FCLP	5,542	3,290	8,832
Other Pattern Operations	41,600	4,943	46,543
Total	78,411	11,851	90,262
F/A-18C/D Hornet			
Departures	18,458	2,813	21,271
Arrivals	17,411	3,795	21,206
FCLP	4,080	360	4,440
Other Pattern Operations	51,809	6,330	58,139
Total	91,758	13,298	105,056
Transient			
Departures	2,620	44	2,664
Arrivals	2,637	27	2,664
FCLP	0	0	0
Other Pattern Operations	7,002	74	7,076
Total	12,259	145	12,404
Airfield Total	182,428	25,294	207,722

³ Source: ATAC Corporation 2002

2.3.2.1.3 NALF Fentress

Pilots performed 135,190 air operations in Calendar Year 2000 at NALF Fentress. These numbers were calculated using the Naval Aviation Simulation Model (NASMOD), which simulates an “average” year based on a set of assumptions derived from various inputs, including the number and type of aircraft, squadron training syllabus, other airspace users, designated flight tracks, air traffic control procedures, and schedules. Table 2-5 presents the modeled 2000 aircraft operations at NALF Fentress.

**Table 2-5 Projected Annual Operations at NALF Fentress
(2000)⁴**

	Day (7:00am-10:00pm)	Night (10:00pm-7:00am)	Total (Day and Night Only)
F-14 Tomcat			
Departures	1,894	1,390	3,284
Arrivals	2,199	1,085	3,284
FCLP	28,110	20,190	48,300
Total	32,203	22,665	54,868
F/A-18C/D Hornet			
Departures	1,806	1,468	3,274
Arrivals	2,094	1,180	3,274
FCLP	24,744	16,720	41,464
Total	28,644	19,368	48,012
Transient			
Departures	1,451	934	2,385
Arrivals	1,681	704	2,385
FCLP	16,361	11,179	27,540
Total	19,493	12,817	32,310
Airfield Total	80,340	54,850	135,190

⁴ Source: ATAC Corporation 2002⁴

2.3.2.2 Projected Air Operations Data

2.3.2.2.1 NAVSTA Norfolk Chambers Field

Since there is little projected change in the fixed-wing components at Chambers Field, the rotary-wing community is assumed to provide the majority of the projected increase in annual operations. It is projected that rotary-wing components will add 29,568 operations annually by the year 2015.⁵ This is a 26 percent increase over the 111,665 total aircraft operations documented in calendar year 2000. Although annual aircraft operations are projected to increase from the baseline of 111,665 air operations in 2000, they would not exceed the 155,973 annual aircraft operations that were conducted at Chambers Field in 1992. This increase in total air operations is not anticipated to adversely affect the capacity of Chambers Field airfield. Projected calendar year 2015 Rotary-Wing annual flight operations at NAVSTA Norfolk (Chambers Field) are shown in Table 2-6.

⁵ Navy 2000a (Environmental Assessment for the Homeporting of MH-60R/S on the East Coast of the U.S. dated May 2002)

Table 2-6 Projected 2015 Rotary-Wing Annual Flight Operations, NAVSTA Norfolk Chambers Field

Operation Type	HH-60H			CH-46E			MH-53E		
	Day	Night	Total	Day	Night	Total	Day	Night	Total
Departure	1,320	120	1,440	325	168	493	4,157	105	4,262
Arrival	1,320	120	1,440	296	197	493	4,157	105	4,262
Touch and Go	-	-	-	452	-	452	556	-	556
FDLP	-	-	-	280	-	280	492	221	713
GCA Box	296	240	536	480		480	418	438	856
Subtotal	2,936	480	3,416	1,833	365	2,198	9,780	869	10,649

Operation Type	MH-60S			Total Annual Operations		
	Day	Night	Total	Day	Night	Total
Departure	12,004	2,670	14,674	17,806	3,063	20,869
Arrival	12,004	2,670	14,674	17,777	3,092	20,869
Touch and Go	8,266	6	8,272	9,274	6	9,280
FDLP	7,832	-	7,832	8,604	221	8,825
GCA Box	2,730	1,196	3,926	3,924	1,874	5,798
Subtotal	42,836	6,542	49,378	57,385	8,256	65,641

2.3.2.2.2 NAS Oceana

The number of annual operations at NAS Oceana is projected to decrease by 37 percent by 2015. This is attributable to two factors: (1) the reduction of aircraft at NAS Oceana, and (2) the construction of a new Outlying Landing Field (OLF), providing operational flexibility and noise mitigation through increased availability of FCLP training periods particularly important during surge operations. The projected operations were estimated using the NASMOD. The decrease in operations at NAS Oceana is proportional to the projected aircraft loading. Table 2-7 presents the modeled 2015 projected aircraft operations at NAS Oceana.

Table 2-7 Modeled Annual Operations at NAS Oceana (2015)

	Day (7:00am- 10:00pm)	Night (10:00pm- 7:00am)	Total (Day and Night Only)
F-14	0	0	0
F/A-18 Hornet	49,042	6,775	55,817
F/A-18 Super Hornet	54,825	7,941	62,766
Transient	11,468	161	11,629
Airfield Total	115,335	14,877	130,212

2.3.2.2.3 NALF Fentress

The number of annual operations at NALF Fentress is projected to decrease by 58 percent in the year 2015. This is attributable to two factors: (1) the reduction of aircraft at NAS Oceana, and (2) the construction of a new Outlying Landing Field (OLF) to provide operational flexibility and mitigate noise impacts through increased availability of FCLP training periods particularly important during surge operations. The projected operations were estimated using the NASMOD. The decrease in operations at NALF Fentress is proportional to the projected aircraft loading. Table 2-8 presents the modeled 2015 projected aircraft operations at NAS Oceana.

Table 2-8 Modeled Annual Operations at NALF Fentress (2015)

	Day (7:00am- 10:00pm)	Night (10:00pm- 7:00am)	Total (Day and Night Only)
F-14	0	0	0
F/A-18 Hornet	18,508	8,677	27,185
F/A-18 Super Hornet	0	0	0
Transient	18,075	10,847	28,922
Airfield Total	36,583	19,524	56,107

Table 2-9 Comparison of Historical Calendar year 2000 Air Operations and Projected Calendar Year 2015 Air Operations within the Mid-Atlantic Region.

Installation	Historical Calendar Year 2000 Air Operations	Projected Calendar Year 2015 Air Operations	Difference	Percentage Difference
NAVSTA Norfolk Chambers Field	111,665	141,233	+29,568	+26%
NAS Oceana	207,722	130,212	-77,510	-37%
NALF Fentress	135,190	56,107	-79,083	-58%
Mid-Atlantic Region Total	454,577	327,552	-127,025	-28%

2.4 Regional Airfield and Aviation Requirements

Based primarily on projected aircraft loading and operational tempo, requirements were developed for airfield and aviation-related facilities. These requirements were developed at the installation level and overlaid on a Regional basis. For example, based upon the projected aircraft loading and mix, a gross requirement for aircraft maintenance hangar space and parking apron was developed and compared to the combined Regional totals and capacities. Surpluses and deficiencies in the existing installation and Regional aviation infrastructure emerged.

2.5 Summary of Existing Assets

2.5.1 Airfield Pavements

2.5.1.1 Runways

There are six active runways in the Navy Mid-Atlantic Region. Four of these are at NAS Oceana, one at NAVSTA Norfolk Chambers Field, and one at NALF Fentress. Additionally, Chambers Field has a heliport with two helicopter runways. Over 98 % of runways are considered adequate for the activities that are the subject of this report. See Table 2-10

2.5.1.2 Helicopter Landing Pads

There are various helicopter landing pads throughout the Mid-Atlantic Region. For purposes of this Plan, only those pads located at Chambers Field are identified. There are two helipads at Chambers Field. The condition of the northeast pad is substandard because it lacks lighting for night-time operations. See Table 2-11.

Table 2-10 Runway Pavement Summary

Installation and Runway Designation	Length (LF)	Width (LF)	Quantity (SY)	Condition (A,S,I)	Runway Classification
NAS Oceana					
Runway 05-23 (Left)	12,000	200	266,667	A	B
Runway 05-23 (Right)	8,000	150	133,333	A	B
Runway 14-32 (Left)	8,000	200	177,778	A	B
Runway 14-32 (Right)	8,000	150	133,333	A	B
Chambers Field					
Runway 10-28	8,400	200	186,667	A	B
Runway 09-27 (Right)	1,130	180	22,600	I	(helicopter)
Runway 09-27 (Left)	1,600	150	26,667	A	(helicopter)
NALF Fentress					
Runway 05-23	8,000	200	177,778	A	B

LF= Linear Feet; SY=Square Yards; A,S,I=Adequate, Substandard, Inadequate

Table 2-11 Helicopter Landing Pad Summary

Installation and Helipad Designation	Length (LF)	Width (LF)	Quantity (SY)	Condition (A,S,I)	(IFR/VFR)	Lighted (Y/N)
Chambers Field						
Northeast Pad	200	200	4,444	S	VFR	N
Dragon Pad	200	200	4,444	A	VFR	Y

2.5.1.3 Aircraft Parking Apron

Aircraft parking apron assets are summarized in Table 2-12. The apron also includes peripheral taxiways and access apron. The totals are somewhat deceiving as some of the parking apron is constrained by existing configurations, location and airfield safety criteria that make it unusable for aircraft parking. The LP Area North totals are based assumptions that the recapitalization plan will be accomplished.

Table 2-12 Mid-Atlantic Current Aircraft Parking Apron Summary

Location	Length (LF)	Width (LF)	Configuration	Quantity (SY)
NAVSTA Norfolk (Chambers Field)				
LF Area	895	671	Irregular	65,822
SP Area	2,426	740	Irregular	199,551
LP Area (North)	969	1,987	Irregular	214,017
LP Area (South)	1,765	666	Irregular	123,967
Chambers Field Total				603,357
NAS Oceana				
Apron (North-east)	3,085	877	Irregular	235,772
Apron (North-west)	3,770	900	Irregular	335,815
NAS Oceana Total				571,587
Mid-Atlantic Region Total				1,174,944

2.5.1.4 Other Airfield Pavements

Other airfield pavements include ordnance handling pads, combat aircraft loading areas (CALAs), washracks, and rinse areas. The existing other airfield pavement assets are discussed in the individual installation sections of the Plan.

2.5.1.5 Organizational Level Maintenance

2.5.1.5.1 Aircraft Maintenance Hangars

Two types of aircraft maintenance hangars exist in the Mid-Atlantic Region. Type I hangars are smaller and designed for carrier-based aircraft. Type II hangars are larger and designed for patrol aircraft. In some cases a Type I hangar can be used to house non-carrier-based aircraft. A Type II hangar can be used to house carrier-based aircraft.

In the Mid-Atlantic Region, there are a total of 13 active aircraft maintenance hangars, three other structures used for the purposes of aircraft maintenance. Also, there is one aircraft maintenance hangar currently under construction, and one aircraft maintenance hangar programmed for FY 2004 construction. The total Type I and Type II high-bay hangar (O/H) space available is 692,507 square feet and 59,580 square feet. The total Type I and Type II crew and equipment (01) space available is 324,217 square feet and 271,628 square feet. The total Type I and Type II administrative (02) space available is 271,628 square feet and 22,045 square feet. (see Table 2-13).

A more descriptive measure of the Regional hangar assets and future needs is the module equivalent. However, most of the older hangars within the Region, primarily located at NAS Oceana, were designed and built prior to the modular hangar concept. This makes it somewhat difficult to equate the older hangars to current hangar criteria. In most of the older hangars, the modules of O/H and OS (01 plus 02 space) are not the same. For example, Hangar 404 at NAS Oceana has an O/H Type I module equivalent capacity of 3.5 and an OS Type I module equivalent capacity of 2.25. Therefore, the current capacity of the hangar taken as a whole is computed to be the equivalent of 3 Type I hangar modules.

There exist the equivalent of 38.75 O/H modules and 34.75 OS (a combination of O1 crew and equipment space and O2 administrative space) modules in the Mid-Atlantic Region. Of the O/H modules, 36.75 is Type I hangar and 2.0 of the O/H modules is Type II hangar. Of the 32.75 of the O/H modules is Type I hangar and 2.0 of the O/H modules is Type II hangar. Because the O/H spaces exceed the OS spaces, an opportunity to increase total hangar capacity may exist by adding only OS space to certain hangars in the Region. This will be explored in detail in Chapters 3 and 4 of this document.

Table 2-13 Mid-Atlantic Current Aircraft Maintenance Hangar Summary

Facility Number	Hangar Type	O/H Capacity	OS Capacity	O/H (211-05) (square feet)	01 (211-06) (square feet)	02 (211-07) (square feet)
NAVSTA Norfolk (Chambers Field)						
LF59	I	2.0	2.0	31,950	20,000	17,406
LF60	I	1.0	1.0	19,158	10,316	10,642
LP27	I	1.0	1.0	19,739	10,508	8,590
LP21	I	1.0	1.0	20,489	12,801	8,572
SP35	I	2.0	2.0	39,718	17,186	12,570
LP48	I	1.0	1.0	22,275	14,542	6,296
LP33	II	1.0	1.0	28,560	12,050	12,000
LP34	I	2.0	2.0	39,936	20,452	17,280
SPxx	II	1.0	1.0	31,020	13,060	10,045
LP167(1)	I	2.0	2.0	38,938	19,941	16,848
Chambers Field Subtotal	I	12.0	12.0	232,203	125,746	98,204
	II	2.0	2.0	59,580	25,110	22,045
NAS Oceana						
23	I	0.5	0.25	11,934	2,658	0
111	I	3.5	3.0	61,957	27,262	27,262
122	I	5.5	5.0	108,760	32,449	55,061
145	I	2.0	2.0	41,143	22,049	14,403
137(2)	I	0.25	0.25	5,625	550	432
200	I	4.5	4.5	83,223	48,423	35,778
404	I	3.5	2.25	70,399	22,330	19,490
500	I	5.0	3.5	77,263	42,750	20,998
NAS Oceana Subtotal	I	24.75	20.75	460,304	198,471	173,424
Mid-Atlantic Region Total	I	36.75	32.75	692,507	324,217	271,628
	II	2.0	2.0	59,580	25,110	22,045

2.5.1.5.1.1 NAVSTA Norfolk Chambers Field

In the late-1990's, a hangar recapitalization initiative was commenced for Chambers Field. In an effort to reduce infrastructure costs and increase operational efficiencies, nine World War II era hangars were identified for demolition. These hangars are to be replaced by five new state-of-the-art aircraft maintenance hangars.

For purposes of this Plan, the existing hangars identified for demolition will not be counted as an existing asset. Therefore, Chambers Field has six Type I and one Type II aircraft maintenance hangars. The Type I hangars are LF59, LF60, LP27, LP21, SP35, and LP34 and the Type II hangar is LP33. Chambers Field also has one Type I aircraft maintenance hangar, LP48 which is currently under construction and one Type II aircraft maintenance hangar which is due to start construction in early 2004. Once the hangar recapitalization plan is complete, Chambers Field will have nine (7-Type I and 2-Type II) active aircraft maintenance hangars. Additionally, Chambers Field has two facilities, V88 and LP167 that were formerly used as aircraft maintenance hangars. Approximately one-half of one of the hangars, (LP167) is currently used by the Naval Aviation Depot Jacksonville (NADEP JAX) detachment to perform Integrated Maintenance Concept (IMC) work on the E-2C and C-2A aircraft. The other hangar, V88, is primarily being used as a storage facility for Aircraft Carrier consumables.

2.5.1.5.1.2 NAS Oceana

NAS Oceana has six Type I aircraft maintenance hangars. They are 111, 122, 145, 200, 404, and 500. A seventh hangar, 23, is used to house and maintain the Search and Rescue (SAR) helicopters. Additionally, the eastern-most hangar bay of the Strike Fighter Weapons School, Atlantic (SFWSL), 137, is used by a contractor to maintain training aircraft assigned to Commander, Strike Fighter Wing Atlantic.

2.5.1.5.1.3 NALF Fentress

There are no aircraft maintenance hangars at NALF Fentress.

2.5.1.6 Intermediate Level Maintenance

Complex aircraft component repairs are conducted at an Aircraft Intermediate Maintenance Division (AIMD) by specialized technicians who repair the inoperative components that the organization-level maintenance personnel have removed from aircraft. Existing AIMD assets are discussed in the individual installation sections of this Plan.

2.5.1.7 Depot Level Maintenance

There is no Naval Aviation Depot (NADEP) in the Mid-Atlantic Region; however, facilities are used to facilitate depot artisan field teams to perform on-site IMC repair, squadron-requested planned and estimator repair to damaged aircraft (ISR) and aircraft modification (MOD). Existing IMC, ISR, and MOD assets are discussed in the individual installation sections of this Plan.

2.5.1.8 Other Ancillary Airfield Assets

Other ancillary airfield assets include direct fueling stations, fuel storage, passenger and cargo terminals, air operations buildings, and control towers. The existing other ancillary airfield assets are discussed in the individual installation sections of this Plan.

2.6 Regional Needs Analysis

2.6.1 Airfield Pavements

2.6.1.1 Runways

Most of the runways in the region are adequate. All of the active runways, both fixed and rotary wing, are in adequate condition.

2.6.1.2 Helicopter Landing Pads

One of the two operational helicopter landing pads at Chambers Field is in adequate condition. The other helicopter landing pad is substandard due to the fact that it is not lighted for night operations. Due to the projected increase in the number of rotary wing operations and training requirements, a minimum of two additional helipads and two additional hover check pads will be required at Chambers Field. The new helipads will need to be illuminated for night operations. Site plans are included in Chapter 6 Regional Concept and Development Plans.

2.6.1.3 Aircraft Parking Aprons

Tables 2-14, 2-15, 2-16 and 2-17 provide a summary of parking requirements for Chambers Field and NAS Oceana. These tables provide a comparison of apron space requirement between 2003 and 2015. Chambers Field increase in total parking requirement needs between 2003 and 2015. NAS Oceana has a decrease in parking requirement needs between 2003 and 2015. Chambers Field has a projected increase in total parking requirement needs between 2003 and 2015 of approximately 100,000 SY or 20% primarily due to the stand up of MH-60S aircraft squadrons. NAS Oceana has a projected 1,000 SY or 0.2% decrease in parking requirement needs between 2003 and 2015. This decrease is seen as negligible.

Tables 2-18, 2-19, 2-20 and 2-21 provide a summary of hangar space requirements for Chambers Field and NAS Oceana. These tables provide a comparison of hangar space requirements between 2003 and 2015. Again, there is a deficit for Chambers Field and a surplus for NAS Oceana in this time period.

Table 2-14 NAVSTA Norfolk (Chambers Field) Aircraft Parking Apron Requirement Summary

Squadron	Type of Aircraft	Number of Aircraft		Aircraft in Hangar		Aircraft on Apron		Planning Guidance (SY per aircraft)		Peripheral Taxiway Width (LF)	Total Aircraft Parking Requirement (SY)	
		(2003)	(2015)	(2003)	(2015)	(2003)	(2015)	45 degree	90 degree		(2003)	(2015)
Permanent Party Aircraft												
HC-6	MH-60S	12	10	4	4	10	8	-	1,557	101	27,248	21,798
HC-8	MH-60S	3	10	1	4	3	8	-	1,557	101	8,174	21,798
	H-46	11	0	4	0	9	0	-	1,533	95	24,145	0
HC-2	H-3	16	0	6	0	13	0	-	2,036	113	46,319	0
	MH-60S	0	20	0	7	0	17	-	1,557	101	0	46,321
HM-14	MH-53	15	15	5	5	13	13	-	3,398	139	77,305	77,305
VAW-120	E-2C	10	10	3	3	9	9	-	1,985	150	31,264	31,264
	C-2A	5	5	2	2	4	4	-	2,000	150	14,000	14,000
VAW-121	E-2C	4	4	2	2	3	3	-	1,985	150	10,421	10,421
VAW-123	E-2C	4	4	2	2	3	3	-	1,985	150	10,421	10,421
VAW-124	E-2C	4	4	2	2	3	3	-	1,985	150	10,421	10,421
VAW-125	E-2C	4	4	2	2	3	3	-	1,985	150	10,421	10,421
VAW-126	E-2C	4	4	2	2	3	3	-	1,985	150	10,421	10,421
VRC-40	C-2A	12	12	4	4	10	10	-	2,000	150	35,000	35,000
VAW-78	E-2C	4	4	2	2	3	3	-	1,985	150	10,421	10,421
VR-56	C-9	5	0	1	0	5	0	-	3,165	150	27,694	0
	C-40A	0	4	0	1	0	4	-	3,545	150	0	24,815
HCS-4	HH-60H	8	8	3	3	7	7	-	1,557	101	19,073	19,073
MAG-42, Det. B	CH-46	12	12	4	4	10	10	-	1,533	95	26,828	26,828
HC-new	MH-60S	0	12	0	4	0	10	-	1,557	101	0	27,248
CV-1	MH-60S	0	8	0	3	0	7	-	1,557	101	0	19,073
CV-2	MH-60S	0	8	0	3	0	7	-	1,557	101	0	19,073
CV-3	MH-60S	0	8	0	3	0	7	-	1,557	101	0	19,073
CV-4	MH-60S	0	8	0	3	0	7	-	1,557	101	0	19,073
CV-5	MH-60S	0	8	0	3	0	7	-	1,557	101	0	19,073
Station	C-12	5	6	1	1	5	6	-	1,040	150	9,100	10,920
Total Permanent Party		138	188	50	69	116	159				408,676	514,261
Transient Aircraft												
	C-130	2	2	-	-	2	2	-	4,940	150	17,290	17,290
	C-5	1	2	-	-	1	2	-	14,300	150	25,025	50,050
	767	1	1	-	-	1	1	-	9,400	150	16,450	16,450
	DC-8	1	0	-	-	1	0	-	8,073	150	14,128	0
	C-141	1	0	-	-	1	0	-	9,680	150	16,940	0
	C-17	1	3	-	-	1	3	-	5,670	150	9,923	29,768
Total Transient		7	8			7	8				99,756	113,558
NAVSTA Norfolk (Chambers Field) Subtotals		145	196	50	69	123	167				508,432	627,819
Less (-) deployed squadron(s)		-6	-14	-3	-6	-5	-12				-17,421	-36,494
NAVSTA Norfolk (Chambers Field) Totals		139	182	47	63	118	155				491,011	591,325

Table 2-15 NAS Oceana Aircraft Parking Apron Requirements Summary

Squadron	Type of Aircraft	Number of Aircraft		Aircraft in Hangar		Aircraft on Apron		Planning Guidance (\$Y per aircraft)		Peripheral Taxiway Width (LF)	Total Aircraft Parking Requirement (\$Y)	
		(2003)	(2015)	(2003)	(2015)	(2003)	(2015)	45 degree	90 degree		(2003)	(2015)
Permanent Party Aircraft												
VF-101	F-14A	5	0	2	0	4	0	1,778	-	150	12,446	0
	F-14B	9	0	3	0	8	0	1,778	-	150	24,892	0
	F-14D	8	0	3	0	7	0	1,778	-	150	21,781	0
VF(A)-11	F-14B	11	0	4	0	9	0	1,778	-	150	28,004	0
	F/A-18E	0	12	0	4	0	10	-	2,352	150	0	41,160
VF-31	F-14D	11	0	4	0	9	0	1,778	-	150	28,004	0
VF(A)-32	F-14B	11	0	4	0	9	0	1,778	-	150	28,004	0
	F/A-18F	0	12	0	4	0	10	-	2,352	150	-	41,160
VF(A)-103	F-14B	10	0	4	0	8	0	1,778	-	150	24,892	0
	F/A-18F	0	12	0	4	0	10	-	2,352	150	0	41,160
VF(A)-143	F-14B	11	0	4	0	9	0	1,778	-	150	28,004	0
	F/A-18F	0	12	0	4	0	10	-	2,352	150	0	41,160
VF(A)-211	F-14A	11	0	4	0	9	0	1,778	-	150	28,004	0
	F/A-18F	0	12	0	4	0	10	-	2,352	150	0	41,160
VF(A)-213	F-14D	11	0	4	0	9	0	1,778	-	150	28,004	0
	F/A-18F	0	12	0	4	0	10	-	2,352	150	0	41,160
CSFWL	T-34	6	6	2	2	5	5	-	570	150	4,988	4,988
VFA-106	F/A-18B	4	3	2	1	3	3	-	1,920	150	10,080	10,080
	F/A-18C	12	10	4	4	10	8	-	1,920	150	33,600	26,880
	F/A-18D	16	8	6	3	13	7	-	1,920	150	43,680	23,520
	F/A-18E	0	7	0	3	0	6	-	2,352	150	0	24,696
	F/A-18F	0	17	0	6	0	14	-	2,352	150	0	57,624
VFA-15	F/A-18C	12	0	4	0	10	0	-	1,920	150	33,600	0
	F/A-18E	0	12	0	4	0	10	-	2,352	150	0	41,160
VFA-34	F/A-18C	12	10	4	4	10	8	-	1,920	150	33,600	26,880
VFA-37	F/A-18C	12	10	4	4	10	8	-	1,920	150	33,600	26,880
VFA-81	F/A-18C	12	0	4	0	10	0	-	1,920	150	33,600	0
VFA-83	F/A-18C	12	10	4	4	10	8	-	1,920	150	33,600	26,880
VFA-87	F/A-18C	12	10	4	4	10	8	-	1,920	150	33,600	26,880
VFA-105	F/A-18C	12	0	4	0	10	0	-	1,920	150	33,600	0
	F/A-18E	0	12	0	4	0	10	-	2,352	150	0	41,160
VFA-131	F/A-18C	12	10	4	4	10	8	-	1,920	150	33,600	26,880
VFA-136	F/A-18C	12	10	4	4	10	8	-	1,920	150	33,600	26,880
VFC-12	F/A-18A	10	10	4	4	8	8	-	1,920	150	26,880	26,880
	F/A-18B	2	2	1	1	2	2	-	1,920	150	6,720	6,720
Station	H-3	2	0	1	0	2	0	-	2,036	113	7,126	0
	MH-60S	0	2	0	1	0	2	-	1,557	101	0	5,450
Total Permanent Party		258	221	92	81	214	183				687,509	677,398
Transient Aircraft												
	F/A-18C	5	4	-	-	5	4	-	1,920	150	16,800	13,440
	F/A-18E	0	3	-	-	0	3	-	2,352	150	0	12,348
	KC-135	1	1	-	-	1	1	-	9,400	150	16,450	16,450
	C-130	1	1	-	-	1	1	-	4,940	150	8,645	8,645
Total Transient		7	9			7	9				41,895	50,883
NAS Oceana Subtotals		265	230	92	81	221	192				729,404	728,281
Less (-) deployed squadron(s)		0	0	0	0	0	0				0	0
NAS Oceana Totals		265	230	92	81	221	192				729,404	728,281

Table 2-16 Comparison of Existing Aircraft Parking Apron Assets and Requirements and Projected FY 2015 Aircraft Parking Apron Requirements

Installation	Existing Assets (SY)	2003 Requirement (SY)	2015 Requirement (SY)
NAVSTA Norfolk Chambers Field	603,357	491,011	591,325
NAS Oceana	571,587	729,404	728,281
Mid-Atlantic Region Totals	1,174,944	1,220,415	1,319,606

Table 2-17 Mid-Atlantic Region Aircraft Parking Apron Requirements Summary

Location	Number of Aircraft		Aircraft in Hangar		Aircraft on Apron		Total Aircraft Parking Requirement (SY)	
	(2003)	(2015)	(2003)	(2015)	(2003)	(2015)	(2003)	(2015)
NAVSTA Norfolk (Chambers Field)								
Permanent Party	132	174	47	63	111	147	391,255	477,767
Transient	7	8	0	0	7	8	99,756	113,558
NAVSTA Norfolk (Chambers Field) Totals	139	182	47	63	118	155	491,011	591,325
NAS Oceana								
Permanent Party	258	221	92	81	214	183	687,509	677,398
Transient	7	9	0	0	7	9	41,895	50,883
NAS Oceana Totals	265	230	92	81	221	192	729,404	728,281
Mid-Atlantic Region								
Permanent Party	390	395	139	145 144	325	330	1,078,764	1,155,165
Transient	14	17	0	0	14	17	141,651	164,441
Mid-Atlantic Region Totals	404	412	139	144	339	347	1,220,415	1,319,606

Table 2-18 NAVSTA Norfolk (Chambers Field) Aircraft Maintenance Hangar Requirement Summary 4

Permanent Party						2003 Hangar Requirements						2015 Hangar Requirements					
Squadron	Type of Aircraft	Number of Aircraft		Personnel Loading		Type	Modules		O/H (211-05)	01 (211-06)	02 (211-07)	Type	Modules		O/H (211-05)	01 (211-06)	02 (211-07)
		(03)	(15)	(03)	(15)		O/H	OS					O/H	OS			
HC-6	MH-60S	12	10	290	271	I	1.0	1.0	19,968	10,526	8,720	I	1.0	1.0	19,968	10,526	8,720
HC-8	MH-60S H-46	3 11	10 0	297	271	I	1.0	1.0	19,968	10,526	8,720	I	1.0	1.0	19,968	10,526	8,720
HC-2	H-3 MH-60S	16 0	0 20	432	498	I	1.0	1.0	19,968	10,526	8,720	I	1.0	1.0	19,968	10,526	8,720
HM-14	MH-53	15	15	706	706	II	1.0	1.0	28,560	13,886	12,080	II	1.0	1.0	28,560	13,886	12,080
VAW-120	E-2C C-2A	10 5	10 5	545	545	I	1.0	1.0	19,968	10,526	8,720	I	1.0	1.0	19,968	10,526	8,720
VAW-121	E-2C	4	4	168	168	I	0.5	0.5	9,984	6,518	5,640	I	0.5	0.5	9,984	6,518	5,640
VAW-123	E-2C	4	4	168	168	I	0.5	0.5	9,984	6,518	5,640	I	0.5	0.5	9,984	6,518	5,640
VAW-124	E-2C	4	4	168	168	I	0.5	0.5	9,984	6,518	5,640	I	0.5	0.5	9,984	6,518	5,640
VAW-125	E-2C	4	4	168	168	I	0.5	0.5	9,984	6,518	5,640	I	0.5	0.5	9,984	6,518	5,640
VAW-126	E-2C	4	4	168	168	I	0.5	0.5	9,984	6,518	5,640	I	0.5	0.5	9,984	6,518	5,640
VRC-40	C-2A	12	12	346	346	I	1.0	1.0	19,968	10,526	8,720	I	1.0	1.0	19,968	10,526	8,720
VAW-78	E-2C	4	4	206	206	I	0.5	0.5	9,984	6,518	5,640	I	0.5	0.5	9,984	6,518	5,640
VR-56	C-9 C-40A	5 0	0 4	315	315	II	1.0	1.0	28,560	13,886	12,080	II	1.0	1.0	28,560	13,886	12,080
HCS-4	HH-60H	8	8	250	250	I	1.0	1.0	19,968	10,526	8,720	I	1.0	1.0	19,968	10,526	8,720
MAG-42, Det. B	CH-46	12	12	350	350	I	1.0	1.0	19,968	10,526	8,720	I	1.0	1.0	19,968	10,526	8,720
HC-new	MH-60S	0	12	0	324	-	-	-	-	-	-	I	1.0	1.0	19,968	10,526	8,720
CV-1	MH-60S	0	8	0	310	-	-	-	-	-	-	I	1.0	1.0	19,968	10,526	8,720
CV-2	MH-60S	0	8	0	310	-	-	-	-	-	-	I	1.0	1.0	19,968	10,526	8,720
CV-3	MH-60S	0	8	0	310	-	-	-	-	-	-	I	1.0	1.0	19,968	10,526	8,720
CV-4	MH-60S	0	8	0	310	-	-	-	-	-	-	I	1.0	1.0	19,968	10,526	8,720
CV-5	MH-60S	0	8	0	310	-	-	-	-	-	-	I	1.0	1.0	19,968	10,526	8,720
Station	C-12	5	6	23	23	I	0.25	0.25	4,992	2,632	2,180	I	0.25	0.25	4,992	2,632	2,180
NADEP JAX	E-2C C-2A MH-60S	-	-	35	102	I	2.0	1.0	39,936	19,745	-	I	5.0	2.0	99,840	38,525	-
NAVSTA Norfolk (Chambers Field) Subtotals		138	188	4,635	6,597	I	12.25	11.25	244,608	135,167	97,060	I	21.25	18.25	424,320	217,103	149,380
						II	2.0	2.0	57,120	27,772	24,160	II	2.0	2.0	57,120	27,772	24,160
Less (-) deployed squadron(s)		- 6	- 14	-226	-536	I	-0.5	-0.5	-9,984	-6,518	-5,640	I	-1.5	-1.5	-29,952	-17,044	-14,360
						II	0	0	0	0	0	II	0	0	0	0	0
NAVSTA Norfolk (Chambers Field) Total		132	174	4,409	6,061	I	11.75	10.75	234,624	128,649	91,420	I	19.75	16.75	394,368	200,059	135,020
						II	2.0	2.0	57,120	27,772	24,160	II	2.0	2.0	57,120	27,772	24,160

⁶ For 2003, includes 1 E-2C Operational Squadron and 1 C-2A two aircraft detachments.
For 2015, includes 1 E-2C operational squadron and 1 C-2A two aircraft detachments,
and 1 MH-60S Operational Squadron

Table 2-19 NAS Oceana Aircraft Maintenance Hangar Requirement Summary

Permanent Party						2003 Hangar Requirements						2015 Hangar Requirements					
Squadron	Type of Aircraft	Number of Aircraft		Personnel Loading		Type	Modules		O/H (211-05)	01 (211-06)	02 (211-07)	Type	Modules		O/H (211-05)	01 (211-06)	02 (211-07)
		(03)	(15)	(03)	(15)		O/H	OS					O/H	OS			
VF-101	F-14A F-14B F-14D	5 9 8	0 0 0	879	0	I	2.0	2.5	39,936	28,084	20,328	-	-	-	-	-	-
VF(A)-11	F-14B F/A-18E	11 0	0 12	272 0	0 261	I -	1.0 -	1.0 -	19,968 -	10,526 -	8,720 -	- I	- 1.0	- 1.0	- 19,968	- 10,526	- 8,720
VF-31	F-14D	11	0	272	0	I	1.0	1.0	19,968	10,526	8,720	-	-	-	-	-	-
VF(A)-32	F-14B F/A-18F	11 0	0 12	272 0	0 298	I -	1.0 -	1.0 -	19,968 -	10,526 -	8,720 -	- I	- 1.0	- 1.0	- 19,968	- 10,526	- 8,720
VF(A)-103	F-14B F/A-18F	10 0	0 12	272 0	0 298	I -	1.0 -	1.0 -	19,968 -	10,526 -	8,720 -	- I	- 1.0	- 1.0	- 19,968	- 10,526	- 8,720
VF(A)-143	F-14B F/A-18F	11 0	0 12	272 0	0 298	I -	1.0 -	1.0 -	19,968 -	10,526 -	8,720 -	- I	- 1.0	- 1.0	- 19,968	- 10,526	- 8,720
VF(A)-211	F-14A F/A-18F	11 0	0 12	272 -	- 298	I -	1.0 -	1.0 -	19,968 -	10,526 -	8,720 -	- I	- 1.0	- 1.0	- 19,968	- 10,526	- 8,720
VF(A)-213	F-14D F/A-18F	11 0	0 12	272 -	- 298	I -	1.0 -	1.0 -	19,968 -	10,526 -	8,720 -	- I	- 1.0	- 1.0	- 19,968	- 10,526	- 8,720
CSFWL	T-34	6	6	158	158	I	0.5	0.25	9,984	2,632	2,180	I	0.5	0.25	9,984	2,632	2,180
VFA-106	F/A-18B F/A-18C F/A-18D F/A-18E F/A-18F	4 12 16 0 0	3 10 8 7 17	651	1,113	I	2.0	2.0	39,936	23,239	14,608	I	3.0	3.5	59,904	40,929	27,673
VFA-15	F/A-18C F/A-18E	12 0	0 12	210 0	0 261	I -	1.0 -	1.0 -	19,968 -	10,526 -	8,720 -	- I	- 1.0	- 1.0	- 19,968	- 10,526	- 8,720
VFA-34	F/A-18C	12	10	210	210	I	1.0	1.0	19,968	10,526	8,720	I	1.0	1.0	19,968	10,526	8,720
VFA-37	F/A-18C	12	10	210	210	I	1.0	1.0	19,968	10,526	8,720	I	1.0	1.0	19,968	10,526	8,720
VFA-81	F/A-18C	12	0	210	0	I	1.0	1.0	19,968	10,526	8,720	-	-	-	-	-	-
VFA-83	F/A-18C	12	10	210	210	I	1.0	1.0	19,968	10,526	8,720	I	1.0	1.0	19,968	10,526	8,720
VFA-87	F/A-18C	12	10	210	210	I	1.0	1.0	19,968	10,526	8,720	I	1.0	1.0	19,968	10,526	8,720
VFA-105	F/A-18C F/A-18E	12 0	0 12	210 0	0 261	I -	1.0 -	1.0 -	19,968 -	10,526 -	8,720 -	- I	- 1.0	- 1.0	- 19,968	- 10,526	- 8,720
VFA-131	F/A-18C	12	10	210	210	I	1.0	1.0	19,968	10,526	8,720	I	1.0	1.0	19,968	10,526	8,720
VFA-136	F/A-18C	12	10	210	210	I	1.0	1.0	19,968	10,526	8,720	I	1.0	1.0	19,968	10,526	8,720
VFC-12	F/A-18A F/A-18B	10 2	10 2	254	254	I	1.0	1.0	19,968	10,526	8,720	I	1.0	1.0	19,968	10,526	8,720
Station	H-3 MH-60S	2 0	0 2	39 0	0 39	I -	0.5 -	0.25 -	9,984 -	2,632 -	2,180 -	- I	- 0.5	- 0.25	- 9,984	- 2,632	- 2,180
NADEP JAX	F/A-18A/B F/A-18C/D F/A-18E/F	-	-	38	80	I	1.0	1.0	19,968	20,478	-	I	3.0	1.0	59,904	20,478	-
NAS Oceana Subtotals		258	221	5,813	5,177	I	23.0	23.0	459,264	256,007	187,536	I	22.0	20.0	439,296	224,561	162,833
Less (-) deployed squadron(s)		0	0	0	0		0	0	0	0	0		0	0	0	0	0
NAS Oceana Total		258	221	5,813	5,177		23.0	23.0	459,264	256,007	187,536		22.0	20.0	439,296	224,561	162,833

Table 2-20 Mid-Atlantic Region Aircraft Maintenance Hangar

Requirement Summary

Permanent Party					2003 Hangar Requirements						2015 Hangar Requirements					
Location	Number of Aircraft		Personnel Loading		Type	Modules		O/H (211-05)	01 (211-06)	02 (211-07)	Type	Modules		O/H (211-05)	01 (211-06)	02 (211-07)
	(03)	(15)	(03)	(15)		O/H	OS					O/H	OS			
NAVSTA Norfolk (Chambers Field)	132	174	4,409	6,061	I	11.75	10.75	234,624	128,649	91,420	I	19.75	16.75	394,368	200,059	135,020
					II	2.0	2.0	57,120	27,772	24,160	II	2.0	2.0	57,120	27,772	24,160
NAS Oceana	258	221	5,813	5,177	I	23.0	23.0	459,264	256,007	187,536	I	22.0	20.0	439,296	224,561	162,833
NALF Fentress	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0
Mid-Atlantic Region Totals	390	395	10,222	11,238	I	34.75	33.75	693,888	384,656	278,956	I	41.75	36.75	833,664	424,620	297,853
					II	2.0	2.0	57,120	27,772	24,160	II	2.0	2.0	57,120	27,772	24,160

Table 2-21 Comparison of Existing Aircraft Maintenance Hangar Assets and Requirements and Projected 2015 Aircraft Maintenance Hangar Requirements

Installation	Hangar Type	Existing Hangar Modules		2003 Hangar Module Requirements		2015 Hangar Module Requirements	
		O/H	OS	O/H	OS	O/H	OS
NAVSTA Norfolk Chambers Field	I	12	12	11.75	10.75	19.75	16.75
	II	2	2	2	2	2	2
NAS Oceana	I	24.75	20.75	23	23	22	20
Mid-Atlantic Region Totals	I	36.75	32.75	34.75	33.75	41.75	36.75
	II	2	2	2	2	2	2