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Nicaragua's Air and Air Defense Force: Capabilities and Projections



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A Research Paper

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ALA 86-10033C



August 1986

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Nicaragua's Air and Air Defense Force: Capabilities and Projections



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A Research Paper

This paper was prepared by

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Office of African and Latin American

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Analysis

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It was coordinated with the Office of Soviet

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Analysis, the Office of Global Issues, the
Directorate of Operations, and the National

Intelligence Officer for Latin America.

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Comments and queries are welcome and may be
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Nicaragua's Air and Air Defense Force: Capabilities and Projections



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Key Judgments

Information available as of 15 June 1986 was used in this report.

The Sandinista Air and Air Defense Force, despite continuing personnel and equipment constraints, has markedly improved its overall capabilities during the past three years and provides the regime with its most significant advantage in the war against the insurgents. After coming to power in 1979, the Sandinistas—with Cuban and Soviet Bloc assistance—set out to transform their armed forces into the largest and best equipped in Central America. Frustrated in its efforts to acquire modern jet fighters and facing a growing insurgent threat, the Air Force has shifted its emphasis since 1983 from developing conventional capabilities to enhancing its ability to carry out counterinsurgency missions.



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In conventional forces, the lack of jet fighters or strike aircraft leaves the Sandinista Air Force inferior to those of Honduras, El Salvador, and Guatemala. Nevertheless, Nicaragua has continued to prepare airbases and a nationwide air surveillance radar network that will allow it to employ jet fighters in the future. Ground-based air defenses, which currently offer little protection because of their short range, probably will improve during the next 18 months as the regime expands its air surveillance tracking network, acquires more modern equipment, and gains experience. The lack of trained Nicaraguan operators and maintenance personnel means that additional Cubans will be needed to staff and maintain the radar network.



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The regime's more effective use of airpower in the counterinsurgency effort results from the acquisition of 40 Soviet-built MI-8, MI-17, and MI-25 helicopters, along with training, technical, and operational support from the Cubans. The construction of forward airbases and helicopter landing zones near guerrilla operating areas has improved the government's ability to provide close air support, transport troops and supplies, and evacuate casualties. Nevertheless, the force suffers significant constraints that continue to limit its effectiveness. These include a shortage of pilots, equipment limitations, inexperienced leadership, inefficient command and control, difficulties posed by terrain and weather, and training and maintenance problems.



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We expect the Air and Air Defense Force to continue to improve during the next 18 months through additional experience and a growing equipment inventory, but it is unlikely to overcome its difficulties fully. The Soviets have greatly increased their deliveries of helicopters in recent



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weeks, but Nicaragua may not have enough trained pilots to take full advantage of them, and additional Cuban helicopter pilots probably will be required. We doubt that the Soviet Union will deliver MIG-21s to Nicaragua during the next 18 months because of the risk of triggering US military retaliation, but Moscow may provide Czechoslovak-built L-39s or an equivalent jet trainer to counter US aid to the guerrillas. The L-39 serves as a basic flight trainer in both the Cuban and Soviet Air Forces for pilots who later fly MIG-21s, and it would give the Sandinistas a means to train pilots and gain experience operating jet aircraft before bringing in MIGs. 

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The acquisition of additional combat helicopters and increased experience in their use will affect US interests in Central America by gradually enhancing the government's ability to take the war to the insurgents. Moreover, as long as they lack adequate air defenses, the rebels will be constrained from moving beyond small unit engagements to seize and hold towns or operate in the more populated and open terrain of the Pacific lowlands. Over time, expanded radar coverage and better coordination of air defenses, leading to the possible introduction of radar-guided surface-to-air missiles, could threaten insurgent aerial resupply, deter Honduras from using its Air Force to retaliate for Sandinista cross-border operations, and threaten US reconnaissance aircraft operating over or near Nicaragua. 

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Figure 1
Sandinista Air Force Facilities



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Nicaragua's Air and Air Defense Force: Capabilities and Projections [Redacted]

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Introduction

The Sandinista Air and Air Defense Force, largely through Cuban and Soviet assistance, has grown from a poorly equipped arm inherited from the government of former President Somoza to an increasingly capable component of the Nicaraguan military. Since 1983, Nicaragua has tailored this force to meet the country's most immediate threat—the insurgency—while laying the groundwork for acquisition of more sophisticated equipment. So far, constraints imposed by international politics and resource limitations have prevented Managua from acquiring modern fighter aircraft. [Redacted]

and SA-7 shoulder-fired surface-to-air missile launchers were delivered by Cuba, Libya, Algeria, and Bulgaria over the next few years. [Redacted]

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The Air Force, initially equipped with only a few older piston-engine aircraft and jet trainers left behind by Somoza's forces, set out to acquire new ones. Nicaragua obtained three MI-8 armed transport helicopters from the USSR in 1981; and in 1982 four SF-260 light attack/trainers and two MI-2 helicopters from Libya and two rocket-equipped Alouette helicopters from France. [Redacted], reporting from defectors, and public statements by Sandinista leaders. [Redacted]

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This paper examines the evolution of the Sandinista Air and Air Defense Force, its counterinsurgency and conventional capabilities, the constraints it still must overcome, prospects for continued expansion, and the implications of these developments for the United States. [Redacted]

The regime clearly planned to acquire jet fighters as well. [Redacted] Nicaraguans were sent to Bulgaria and Czechoslovakia in the early 1980s for MIG-21 pilot training. [Redacted]

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[Redacted] indicated that construction of a new military airbase with a 3,000-meter runway and 16 jet fighter-type revetments was begun with Cuban assistance at Punta Huete in 1982. Moreover, Libya made an unsuccessful attempt to deliver at least one L-39 jet trainer to Nicaragua in April 1983. [Redacted]

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Shifting Goals

The development of Nicaragua's Air and Air Defense Force has followed the regime's shifting perceptions of military threats. [Redacted] the unprecedented military buildup initiated by the Sandinistas soon after they came to power in mid-1979 was intended not only to ensure their internal control but also to prepare for possible confrontations with the United States as well as Central American countries they considered hostile. [Redacted]

[Redacted] up to 12 MIG-21s intended for Nicaragua have been stationed in Cuba since late 1984, and that Nicaraguan pilots conduct proficiency training there. Pressure from the United States to prevent the introduction of MIG fighters has delayed their arrival [Redacted]

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The acquisition of relatively modern air and air defense weapons apparently was an initial key goal of the Nicaraguan military buildup. The first known arms shipment to the new regime in 1979 consisted of anti-aircraft guns sent by Cuba, according to [Redacted]

[Redacted]

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¹ According to press and US Embassy reporting, Libya tried to send four plane-loads of military equipment including one disassembled L-39 to Nicaragua in April 1983. The flights were turned back by Brazilian authorities after the cargo was discovered during a refueling stop at Manaus, Brazil. [Redacted]

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[Redacted] indicate additional anti-aircraft artillery

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Figure 2
Weapons Acquired by Nicaragua, 1979-86^a

		1979	80	81	82	83	84	85	86 ^b
Air Force	SF-260					4			
	Alouette					2			
	MI-2						3		2
	AN-2			6		1		2	7
	AN-26						2		1
	AN-30								1
	MI-8			2	1	8	5		
	MI-17							4	11
	MI-25						8		
Air Defense	Light Antiaircraft Artillery	48	48	56	36	38			
	100mm Antiaircraft Gun						18		
	SA-7				30	379			
	Radars					5	8	1	

^a These represent aircraft delivered to Nicaragua since the Sandinista takeover. Some of these may no longer be operational, due to losses or damage.
^b January through June.

[Redacted]

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also have helped design and build various airfields and radar sites. A majority of the estimated 60 to 100 Soviet military personnel in Nicaragua are involved in advising the Air and Air Defense Force, according to defector reporting.

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Growing Counterinsurgency Capability

While the Sandinista Air Force faces numerous problems, it has attained a significant counterinsurgency capability since late 1984, thanks in large part to the delivery of more than 30 new Soviet-built helicopters and a dozen AN-2 and AN-26 transport aircraft. The construction and upgrading of forward airfields and support facilities near guerrilla operating areas has improved the regime's ability to provide close air support and transport supplies and reinforcements. The Air Force also has carried out bombing, reconnaissance, medical evacuation, convoy escort, and forward control missions with varying degrees of success. Nevertheless, the force suffers significant constraints in pilot availability, leadership, command and control, and training and maintenance.

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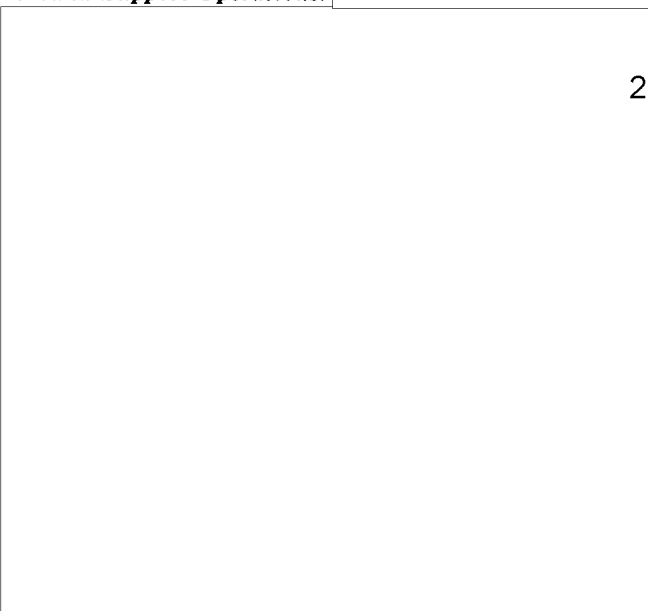
Although the establishment of a nationwide air surveillance tracking network, begun in 1983, was spurred by the growth of the insurgency, it was, in our opinion, intended to serve both conventional and counterinsurgency functions. The Sandinistas probably planned to set up such a system as a prelude to acquiring jet fighters so that Soviet instructors could teach their system of control, which requires aircraft to be monitored and directed by controllers on the ground. Nonetheless, attacks in September 1983 by insurgent light aircraft against targets in Managua, Corinto, and other areas probably were an added incentive to setting up an air surveillance tracking network. The first radar station was established near Masaya just two months later,

and others subsequently were built at Esteli, Toro Blanco, and San Juan del Sur. A fifth site, at Cerro Penas Blancas, was operative for several months starting in late 1985 but was later deactivated. These stations can provide continuous, overlapping radar coverage of the western half of the country at all altitudes above 500 meters, except where masked by mountains.

The buildup of the Sandinista Air and Air Defense Force, like the other branches of service, has taken place with substantial assistance from Havana and Moscow.

we believe that some 60 to 70 Cubans presently serve in advisory and operational capacities, including flying combat missions. Over the years, according to defectors, Cubans have served as staff advisers, trainers, pilots, radar operators, ground coordinators of air operations, and maintenance personnel. They

Ground Support Operations.



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Nicaragua: Air and Air Defense Force Organization

The Sandinista Air and Air Defense Force is headquartered at Sandino Airfield in Managua [Redacted] it comprises a headquarters and staff, and five functional brigades—air, anti-aircraft, radio-technical, maintenance, and rear services. We estimate the force has a total active-duty strength of 2,000 to 2,300 personnel.

[Redacted]

The air brigade controls all of the aircraft, [Redacted] and is organized into combat, helicopter, and transport squadrons. [Redacted]

[Redacted] the air brigade shifted some operations in November 1985 from Sandino to the new airfield at Punta Huete. [Redacted]

[Redacted] as many as 15 aircraft have been based at Punta Huete since November, although there are no aircraft support or maintenance buildings there.

[Redacted]

The anti-aircraft brigade operates and maintains the guns and SA-7 surface-to-air missile launchers that defend Nicaraguan airfields, radar stations, and key governmental targets in the Managua area, [Redacted]

[Redacted] The rest of the light anti-aircraft weapons and SA-7 launchers reportedly are subordinate to the Army and the Navy. The radio-technical brigade operates and maintains the air surveillance radar stations [Redacted]

[Redacted] the Army's seven militia regional headquarters serve as air defense command and control authorities, receiving tracking reports and authorizing anti-aircraft units to fire on targets flying in their airspace [Redacted]

[Redacted] Sandinista officers have been counting on the helicopters—especially the MI-25s—to provide the firepower and mobility to break up rebel concentrations while protecting government troops. Rebel commanders have credited government helicopters with causing many casualties, [Redacted] noting especially the surprise achieved when they approach suddenly at low



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altitude and their enormous firepower. Rebel commanders admit their fear of air attack has caused them to cut short operations and retreat before reaching their objectives. [Redacted]

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Transport. The Air Force's improved transport capabilities and the use of newly constructed airstrips to move supplies to remote areas are allowing the Sandinista Army to conduct operations over a broader area of the country and to maintain ground forces near the Honduran and Costa Rican borders to interdict rebel infiltration [Redacted]

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[Redacted] the Sandinistas use both helicopters and fixed-wing aircraft to support operations against

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[Redacted]

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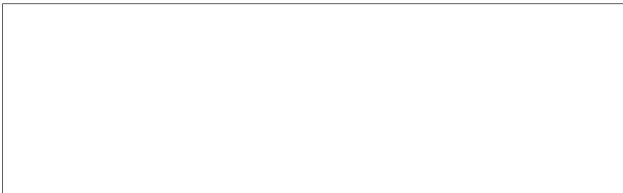
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Transport capabilities have been enhanced by nearly doubling the number of AN-2 light transports during the past nine months. [Redacted]

seven AN-2s were delivered to Nicaragua in early 1986—some of them returning from overhaul in Cuba—giving the Sandinistas a total of 16. These small transports are being used to assist Army efforts to maintain garrisons and support bases near insurgent operating areas. The AN-2s also allow the Sandinistas greater flexibility in prosecuting the war because they can take advantage of the existence of dozens of small, unimproved agricultural and municipal airfields in remote areas. [Redacted]

Bombing Missions. Soviet-built AN-26 transports and MI-8 helicopters have been used effectively by the Air Force to bomb rebel positions in Nicaragua and the border areas of Honduras and Costa Rica. Although ostensibly civilian transports, AN-26's have

a larger bomb load capacity than other aircraft in the Sandinista inventory and can avoid insurgent anti-aircraft fire and SA-7 surface-to-air missiles by flying higher than 2,000 meters. The Air Force has used them to try to disrupt rebel logistics by attacking border-area airstrips and resupply drop zones. For example, bombing by Sandinista helicopters last September apparently forced the closure of one rebel resupply base in a remote region of the Honduran-Nicaraguan border for several months. [Redacted]

Interdicting Aerial Resupply. The Sandinistas also have attempted to counter insurgent aerial supply flights to units inside Nicaragua, but have had only limited success. Until late 1983 rebel aircraft could overfly Nicaragua with little danger of being detected or downed. [Redacted]

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Airfield Upgrading

[Redacted] the Sandinistas have been constructing new airfields and upgrading existing ones that will allow them to expand ground attack and logistic support for the counterinsurgency effort and eventually to field a jet fighter-interceptor force. The new Punta Huete Airfield was built specifically to accommodate jet fighters. Its runway—some 3,000 meters long—is capable of landing any type of Soviet aircraft. As of May 1986 four jet fighter-type revetments had been completed and 12 others were under construction. No aircraft hangars, fuel storage, or maintenance facilities, however, have been constructed. Secondary airfields capable of handling jet fighters have been completed at Puerto Cabezas and Bluefields. Both have new asphalt runways exceeding 2,000 meters but also lack hangars and maintenance facilities. There are 17 underground fuel tanks at Puerto Cabezas with a combined capacity of 935,000 liters and five at Bluefields with a combined capacity of 275,000 liters. [Redacted]

The Sandinistas also have prepared graded-earth runways at Esteli, Matagalpa, Wiwili, and San Jose de Bocay that are being used by light transport aircraft and helicopters. [Redacted] the runway at Esteli was regraded in 1984 and lengthened to 1,400 meters, a six-position antiaircraft site was set up, and light attack aircraft and helicopters were deployed to the airfield for six weeks. In September 1985 construction began on four 35-meter-diameter revetments and a dispersal taxiway. Esteli Airfield has a nearby 16-tank, 880,000-liter, underground fuel-storage facility and functions as a temporary forward staging base to refuel combat aircraft. The 600-meter airstrip at Wiwili, completed in June 1985, has four aboveground fuel tanks with a total capacity of 220,000 liters. A new 700-meter airstrip was constructed at Matagalpa last fall, and another new airstrip was begun at San Jose de Bocay in February. [Redacted] the Air Force is using these airfields, as well as facilities at Mulukuku, Jinotega, and Juigalpa to resupply border garrisons and to support counterinsurgency operations. [Redacted]

[Redacted] The regime's only apparent success was the downing of a C-47 in August 1984—possibly with an SA-7, according to [Redacted] press reporting—which resulted in the suspension of resupply missions deep inside Nicaragua for almost a year. Since the insurgents' supply flights resumed in June 1985, [Redacted] Sandinista forces have fired at them on numerous occasions with SA-7s, machineguns, and light antiaircraft weapons and forced a few planned drops to be aborted. [Redacted]

Other Capabilities. The Air Force performs additional missions in support of the counterinsurgency including medical evacuations, convoy security, and forward air control, with varying degrees of effectiveness. [Redacted]

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Central American Air Forces

	Nicaragua	Honduras	El Salvador	Guatemala
Jet aircraft				
Fighters		14	14	
Attack/trainers	3	14	10	13
Propeller aircraft				
Aerial gunships		1	7	
Attack/trainers	16	40	35	37
Helicopters				
Gunships	7			
Assault/transport	28	24	66	12

Note: Data for transports are not included.

[REDACTED]

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Limited Conventional Role

Managua's concern about US reaction to the acquisition of jet fighter aircraft, the government's increased attention to the counterinsurgency, and the Nicaraguans' lack of experience and technical proficiency apparently have limited the development of conventional air and air defense capabilities. Nevertheless, the Sandinistas have continued to prepare the airfield facilities and radar network they would need to employ jet aircraft and surface-to-air missile systems in the future. [REDACTED]

The fixed-wing aircraft currently in the Sandinista inventory have few capabilities for conventional offensive operations and pose only a minimal threat to Nicaragua's neighbors. The three T-33s, the only jet fighters in the force, are pre-Korean war US-built attack trainers and would be no match for the Honduran Air Force's Super Mysteres. Although the AN-26s could be used to bomb targets deep inside foreign territory, as they have done against insurgent camps along the border, this would be practical only in Costa Rica, where there is no opposing air force. [REDACTED]

Defensively, Sandinista aircraft can do little to protect Nicaraguan airspace. In areas of good radar coverage, the Air Force might be able to direct a T-33

or other gun-armed light aircraft to intercept an unarmed intruder. Because they lack air intercept radars, however, Nicaraguan aircraft would have to approach and engage targets visually, and their weapons are effective only at ranges of less than 1,500 meters. [REDACTED]

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Ground-based air defense is hampered by similar equipment and operational limitations. The regiment of 18 radar-directed 100-mm antiaircraft guns—which have the capability to destroy targets at a distance of up to 12,000 meters—probably could defend point targets in the Managua area against a small raid by slow-flying aircraft. They have a slow rate of fire, however, and their 1950s-vintage radar is vulnerable to jamming. Other weapons—an estimated 200 optically guided 37-mm, 23-mm, and 14.5-mm antiaircraft guns and some 400 infrared-guided SA-7 launchers—generally are ineffective against targets flying higher than 2,000 meters. Nonetheless, according to [REDACTED] Air Force has a healthy respect for Nicaraguan air

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defenses and, in considering future airstrikes—like that in September 1985 to retaliate for Sandinista cross-border shelling—would prefer to limit operations to soft targets in the immediate border area.

[Redacted]

Constraints

While the Sandinista Air and Air Defense Force has made considerable progress during the past two years, it still exhibits a number of significant deficiencies that hamper its effectiveness as both a conventional and a counterinsurgency force. These include pilot shortages, some antiquated aircraft, inexperienced leadership, inefficient command and control, difficulties posed by terrain and weather, and training and maintenance problems.

A Shortage of Pilots. The most critical weakness, in our view, is the Sandinistas' apparent inability to recruit, develop, and retain new pilots from a reluctant and technically illiterate population.

[Redacted] the Air Force was not training enough pilots to replace those lost and had been unable to keep up with new aircraft deliveries. He blamed this, in part, on the low pay offered to military pilots compared to commercial aviation, and on the number of flying hours required for copilots to become pilots—despite a relaxation of relatively loose Soviet and Cuban standards.

As of April, [Redacted] most of the 28 pilots who had returned from MIG-21 training in the USSR and Bulgaria were being retrained to fly MI-17 helicopters at Punta Huete Airfield.

[Redacted]

Equipment. Most of the fixed-wing aircraft in the force are antiquated, [Redacted] many are in poor condition. Cessna O-2s and Cessna 185s, which along with the helicopters are used primarily for counterinsurgency operations, cannot carry heavy ordnance loads, decreasing their time over targets and their overall effectiveness. Moreover, all of the aircraft are slow and therefore vulnerable to SA-7 surface-to-air missiles and anti-aircraft machinegun



Figure 4. Sandinista Air and Air Defense Force Chief Emmet Lang [Redacted]

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fire at low altitude. The lack of appropriate weapons for engaging rebel aircraft has hampered interdiction efforts.

[Redacted]

In the more modern helicopter fleet, the MI-8 assault transports have proved the most vulnerable.

[Redacted]

[Redacted] Air and Air Defense Force Chief Emmett Lang told a radio audience in January that Nicaraguan helicopters were flying lower to avoid SA-7s and consequently were more vulnerable to ground fire.

[Redacted]

Fear of losing an aircraft to rebel SA-7s apparently has prompted helicopter pilots to fly either very high or at treetop level, and to fire from farther than optimal distances, according to [Redacted]

[Redacted] reports. [Redacted]

[Redacted]

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Pilot Training

Finding and training qualified pilots has been difficult. Only a handful of pilots able to fly the aircraft left behind by Somoza in 1979 joined the Sandinista Air Force, and they quickly rose to top command positions despite their relative youth.

Nicaragua's T-33s and T-28s were flown by four to five Chileans, eight to 10 Palestinians, and an Uruguayan.

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in 1982

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MI-8 helicopters were flown exclusively by Soviet pilots who were training the Nicaraguans. Since 1984 the Soviet and Palestinian roles appear to have been greatly reduced.

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The Sandinistas also have relied on civilian pilots. A source of the

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that all Aeronica pilots serve as reserve officers in the Air Force and that military use of civilian aircraft and pilots was common. Another

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that, because of the pilot shortage, civilian pilots and aircraft were used to fly reconnaissance missions against US warships.

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Numerous reports indicate the Sandinistas relied heavily on foreign pilots for several years. In 1981,

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him as a good leader and fault his lack of knowledge of combat missions.

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Leadership Deficiencies. The Sandinistas, who had only a few transport pilots during their struggle to topple Somoza, have had to build their Air Force leadership from scratch. Even now, Managua appears to rely heavily on former guerrillas who bring little experience to their jobs. Current Air Force Chief Emmett Lang, for example, formerly was Army Chief of Logistics and Personnel, and was a close revolutionary associate of the Ortega brothers. He almost certainly was chosen for his political reliability since he was not a pilot and had only minimal dealings with the Air Force before his selection in February 1985. According to a defector, Air Force pilots do not rate

Command and Control. Inadequate and inefficient command and control frequently have been major problems.

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Terrain also interferes with radar coverage. The mountain ranges, with some peaks exceeding 1,500 meters, block low-altitude radar over large segments of insurgent operating areas. Only the air surveillance site at Esteli is positioned to provide coverage of insurgent aircraft flying in from Honduras, and the lack of radar coverage in eastern Nicaragua allows insurgent aircraft to evade radar detection by flying along the eastern slopes of the mountains. Air surveillance radars that were temporarily located on the mountaintop at Cerro Penas Blancas east of Lago de Apanas in late 1985 probably were removed because of humidity and unfavorable look angles.

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The Sandinistas' inability thus far to challenge insurgent aerial resupply successfully is largely due, in our view, to the failure of regional military headquarters to coordinate target tracking by radar sites with the operations of friendly aircraft and antiaircraft artillery. Antiaircraft units have shot down several crop dusters and civilian air taxis after being advised to fire on any aircraft overflying their area.

Maintenance. Another problem facing the Air Force has been obtaining spare parts for US-manufactured aircraft, such as Cessna O-2s, T-33s, and Cessna 185s. Some parts have been acquired through Mexico, Canada, and Panama, but the shortage of parts and the lack of well-trained maintenance technicians result in long downtimes and cannibalization of some aircraft.

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Military aircraft, including a C-47 and an SF-260 in 1983, also have been lost to friendly ground fire.

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Spare parts for Soviet aircraft are said to be in good supply, but some aircraft have to be shipped to Cuba for repair and overhaul. As many as five AN-2s and at least two MI-8s were shipped from Nicaragua to Cuba during 1984 and 1985.

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Terrain and Weather. Nicaragua's physical geography and weather make the inherently difficult problem of locating, identifying, and targeting small guerrilla units from the air even more problematical. The areas of the most intense insurgency are the mountains of northwest and central Nicaragua, where there is abundant foliage throughout the year and where annual rainfall exceeds 250 centimeters. In the southeastern coastal region, heavy jungle provides concealment for insurgent operations, and precipitation during the rainy season (May to January) normally exceeds 610 centimeters. Ground units operating in the mountains and other remote areas rely heavily on aircraft for mobility and resupply during the rainy season because many roads are rendered impassable by mud and swollen streams.

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Prospective Improvements

The Sandinistas are aware of the constraints under which their Air and Air Defense Force is operating and have made plans—at least on the equipment side—to effect improvements. We expect the force to continue to grow in size over the next 18 months, but rapid shifts in performance and capability are unlikely because of manpower and training requirements.

[Redacted] new aircraft [Redacted] have arrived from the Soviet Union in recent weeks, and steps have been taken to upgrade both air and air defense command and control. As Nicaraguan pilots, radar operators, and command personnel gain more combat experience, the effectiveness of the Air and Air Defense Force will probably improve, but some of the more significant constraints are unlikely to be overcome in the near term. [Redacted]

Aircraft Acquisitions

The Air Force, with substantial Soviet assistance, currently is addressing its most critical problem, the need for additional transport aircraft and helicopters to counter a more sustained, multifront insurgency.

[Redacted]

[Redacted] new MI-17s have been delivered since late April 1986, [Redacted]

[Redacted]

[Redacted]

The new MI-17s will allow the Air Force to form an additional squadron and to continue to increase the use of helicopters to support ground operations in remote areas. Until now the Sandinistas have had the capability to transport only one company of troops at a time. The second squadron will enable them to keep 12 or more aircraft at forward bases for a month or more, while maintaining a full squadron in the Managua area for training. The extended forward basing of helicopters should provide ground commanders not only increased mobility but also greater flexibility and

quicker response to insurgent movements and attacks. To continue expanding, however, the Air Force will have to increase the training program for new pilots or bring in more Cubans to fly combat missions. [Redacted]

[Redacted]

The construction of Punta Huete Airfield and its fighter revetments [Redacted]

[Redacted]

and public assertions by Sandinista leaders of their right to obtain fighters are the most convincing evidence that Nicaragua intends to acquire jet combat aircraft if this becomes politically possible. We believe, however, that under current conditions, the USSR probably will continue to estimate that the risks of delivering them to Nicaragua outweigh the potential benefits. [Redacted]

[Redacted]

Nevertheless, we expect the Sandinistas to continue preparing for the acquisition of high-performance jet fighters. [Redacted] construction of barracks at Punta Huete has begun and could be completed in early 1987, but no progress currently is being made on construction of hangars, fuel storage, or maintenance areas. Radars capable of being used to control fighter operations are present at the base, and we believe landing aids eventually will be installed and ground-based air defense missiles deployed to protect the airfield. There are no indications, however, that preparations have yet begun. In addition, at least some of the pilots who have been trained to fly MIGs probably will receive refresher training in Cuba so that MIGs could be flown to Nicaragua and become operational almost immediately. [Redacted]

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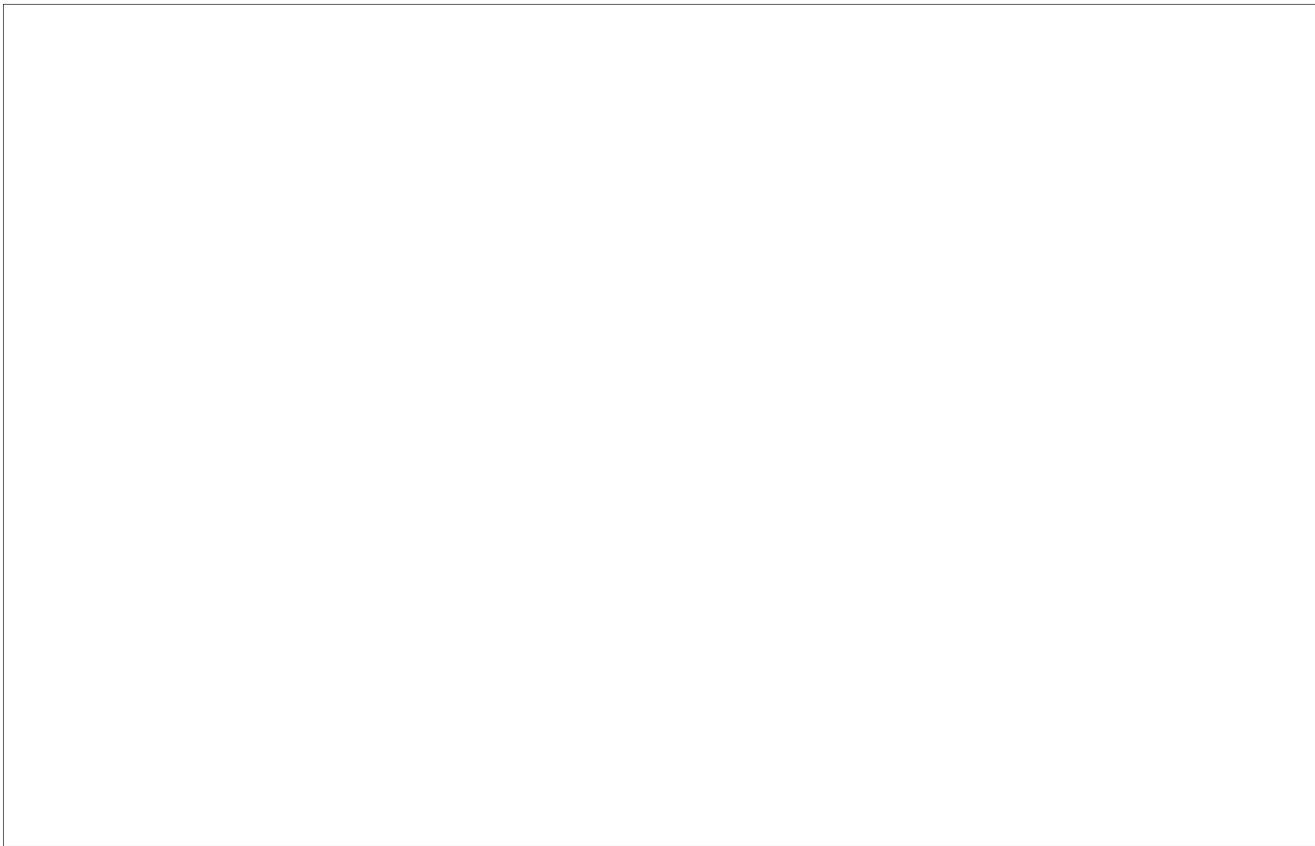
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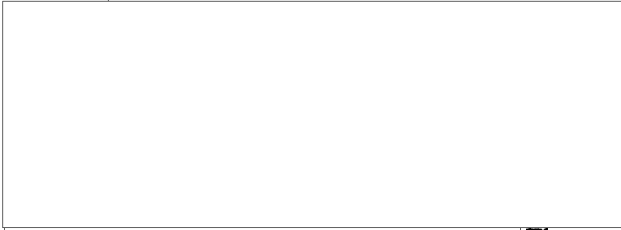
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In the meantime, Managua may seek intermediate jet aircraft. [redacted]



[redacted] The L-39 performs well as a ground attack aircraft, has a greater capability to intercept insurgent resupply aircraft than any aircraft now in Nicaragua, and might be perceived as less likely to provoke a US reaction because it would not give the Sandinistas air superiority over Honduras. Because the L-39 serves as a basic flight trainer in both the Cuban and Soviet Air Forces for pilots who later fly MIG-21s, it would give the Sandinistas a means to train pilots and gain experience in operating a more modern air force before bringing in MIGs. [redacted]

Acquisition of the L-39—or a comparable aircraft—would improve Sandinista counterinsurgency capabilities and provide quicker response time and greater weapons payload than current fixed-wing aircraft. L-39s would free Sandinista Cessna O-2s and AN-26s for reconnaissance and transport duties and probably would be much more effective in attacking rebel camps and supply bases in the border area. In any potential clash with Honduras, however, they would be vulnerable to the Honduran Air Force's Super Mystere fighters, which have greater speed and are equipped with more capable air-to-air weapons. [redacted]

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Possible Air Defense Acquisitions

Air defense acquisitions during the next 18 months are likely to include more air surveillance radars to expand coverage nationwide. We have identified [redacted] enough radars in Nicaragua to operate [redacted] five sites. [redacted]

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publicly stated at a gathering of the Socialist International in Stockholm that Nicaragua would soon have defensive missiles never seen before in Central America. [Redacted] Nicaraguans have been trained in Cuba and Bulgaria to operate the SA-3. [Redacted]

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Command and Control and Training

[Redacted]

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[Redacted] We believe the Sandinistas want to establish an extensive and redundant air surveillance radar system prior to any potential acquisition of radar-guided surface-to-air missiles such as the SA-2 or SA-3. [Redacted]

[Redacted] Chronic command and control problems are unlikely to be resolved in the near future, however. These are difficult tasks, and even Cuba, which has had the benefit of Soviet tutelage since 1962, frequently has failed to perform them well. As long as the regime lacks automated data-relay systems and command and control computers, progress in the effective employment of air defense assets will be slow. [Redacted]

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We expect the Sandinistas to continue diversification and extension of their air defense capabilities through procurement of more radar-guided antiaircraft artillery and possibly radar-guided surface-to-air missiles. Airstrikes by the Honduran Air Force in September 1985 demonstrated Nicaraguan vulnerability to even relatively unsophisticated aircraft like the A-37. We believe the Sandinistas may opt for S-60 57-mm radar-directed guns with substantially higher rates of fire—105 rounds per minute versus 15 for the Sandinista's 100-mm guns—to improve protection against low-level air attack. [Redacted]

It will be much more difficult for the Sandinistas, in our opinion, to find and train enough pilots to expand the helicopter force to cope with the burdens of a multifront war than to obtain new aircraft. [Redacted]

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[Redacted]

[Redacted]

[Redacted] Producing qualified pilots capable of performing well in combat takes a minimum of one to two years after basic flight school, however, and the continued expansion of the Air Force over the next 18 months probably will require even greater reliance on the Cubans. [Redacted]

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Fear of US airstrikes similar to those against Libya in April could provide the rationale for Sandinista acquisition of radar-guided surface-to-air missile systems such as the SA-2, SA-3, or the mobile SA-6 and SA-8. Although these systems most likely would initially protect the Managua area, their deployment to the northern border area would severely reduce the prospect of attacks by the Honduran Air Force or insurgent aerial resupply flights. In June 1985, Sandinista National Directorate member Bayardo Arce

Similarly, the lack of trained radar operators and technicians probably will prevent Nicaraguan air defenses from performing effectively during the next 18 months unless Cuban or Soviet personnel take on a

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greater role in combat operations. [redacted]

[redacted]

close air support and threaten rebel resupply flights during daylight. The loss of even one resupply aircraft by the rebels, given their present thin capabilities in this area, would be a serious blow. As Air Force proficiency grows and more equipment, including additional transport assets, is acquired, Sandinista ground units will be more confident of receiving close air support, troop reinforcements, replenishment, and medical evacuation—with positive effects on Army morale and capabilities. [redacted]

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[redacted]

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[redacted] A few radar-directed 100-mm guns that can reach targets at a distance of up to 2,000 meters recently were moved out of Managua to east-central Nicaragua for the first time, but their radar is highly vulnerable to jamming. The current early warning and air surveillance tracking system leaves most of the eastern half of the country uncovered, and there are gaps in other areas, particularly at low-to-medium altitudes. The most significant threat would be posed by SA-7s and light antiaircraft weapons that are likely to be encountered near Sandinista troop concentrations and major airfields and ports. [redacted]

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Outlook and Implications for the United States

We expect the developing Sandinista airpower will pose an increasing threat to the insurgents during the next 18 months. No sudden or dramatic improvements are likely, however, because solving pilot shortages, equipment and maintenance problems, and command and control deficiencies will be a slow and labor-intensive process. Moreover, a survey of scholarly studies shows that airpower alone has never been the decisive factor in any counterinsurgency, and we believe it will not enable the Sandinistas to defeat the guerrillas unless their ground forces improve as well. [redacted]

Over time, the risk will increase with the expansion and improvement of Nicaragua's air defenses. [redacted]

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The Air and Air Defense Force could be expanded more rapidly if more Cuban pilots and radar operators are provided and their role in combat operations is increased. That might be one option the Sandinistas and their allies could adopt to up the ante if the rebels obtain air defense weapons that threaten to negate the regime's airpower advantage. [redacted]

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Threat to the Insurgency

The Sandinistas' effective use of helicopter gunships will constrain the rebels' ability to mass forces and hold towns and villages, especially if they try to move into the more open terrain of the Pacific lowlands where most Nicaraguans live. The Air Force's acquisition of L-39 or comparable aircraft would increase the regime's edge by enhancing its ability to provide

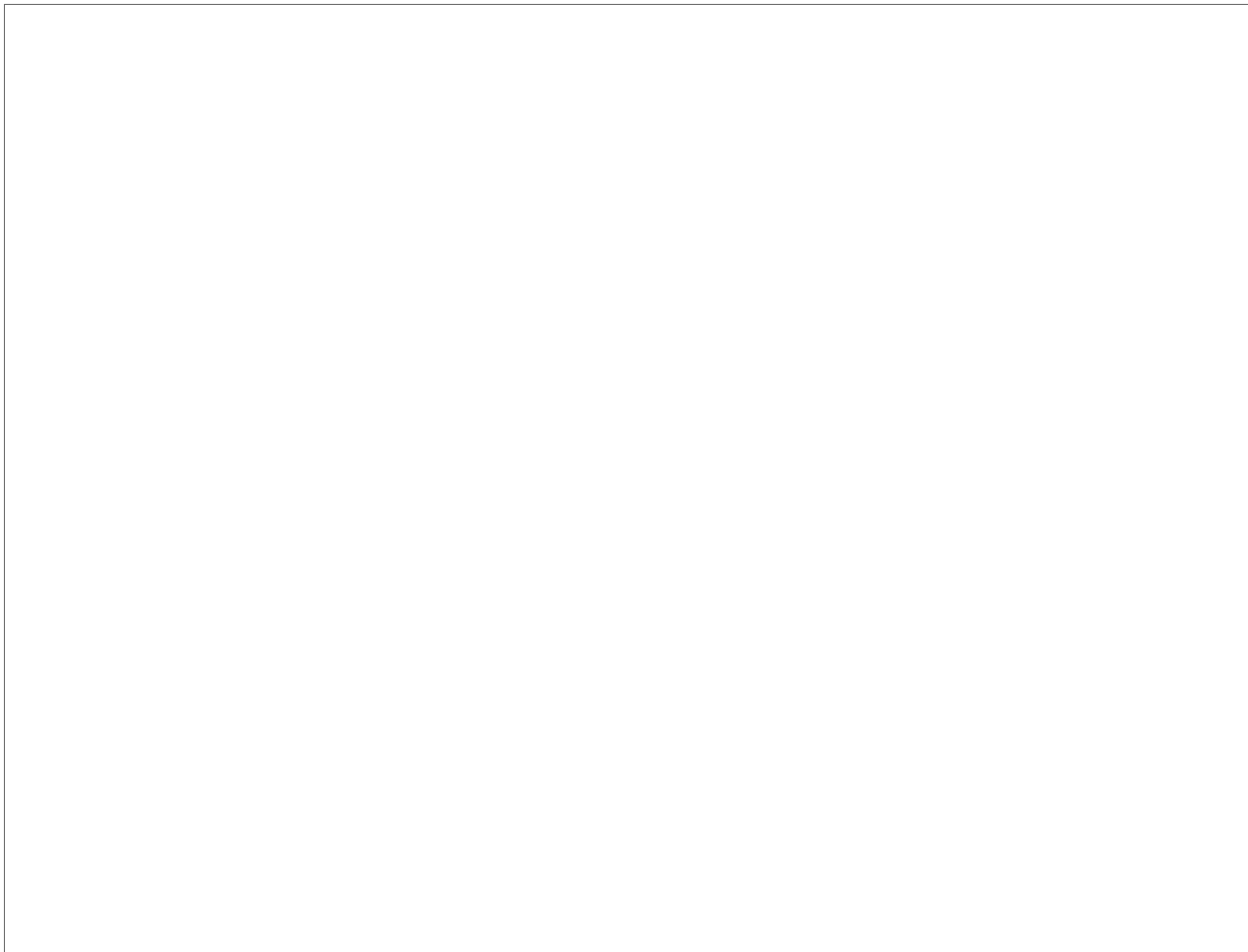
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Threat to Nicaragua's Neighbors

The growth of Sandinista airpower will affect the military balance throughout the Central American region, particularly if the Sandinistas acquire jet fighter aircraft. The arrival of MIG-21s almost certainly would prompt Honduras to demand as a price for continued support of the insurgents a US guarantee of its security as well as speedy delivery of F-5 or possibly F-16 fighters to restore its position of air superiority. Moreover, MIG-21s in Nicaragua would be in range of the Panama Canal, and there are at present no air defenses at the Canal. [Redacted]

We expect the Sandinistas would have to rely on Cuban pilots to fly MIG-21s for a year or two following delivery. [Redacted] Soviet military clients in Angola, Ethiopia, and other African countries who received MIG-21s with no prior experience and minimally trained aircrews were unable to operate them effectively without relying on Cuban pilots. Although current radar sites have most of the equipment necessary for ground-controlled intercept operations, there are few trained operators, and equipment reliability is poor. [Redacted]

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Erratum

Notice to recipients of DI Research Paper ALA 86-10033C, [Redacted]
[Redacted] August 1986, *Nicaragua's*
Air and Air Defense Force: Capabilities and Projections. [Redacted]

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[Redacted] on P-15, the
second sentence should be changed to read "A few radar-directed 100-mm guns
that can reach targets at a distance of up to 12,000 meters . . ."

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