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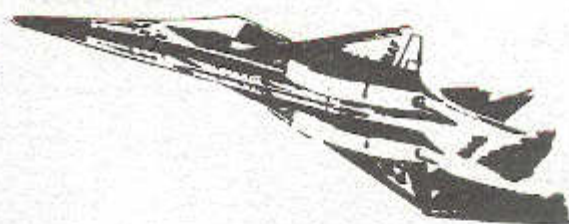
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A MONTHLY MIRROR AND DIGEST OF MILITARY AFFAIRS



## Pakistan and America: the security dimension

**SUPERSONIC TRANSPORT:  
BOEING CONCEPT**



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**Managing Editor:**

**Brig. Abdul Rahman Siddiqi  
(Retd)**

**REPRESENTATIVES:**

**Punjab**

**Capt. M. Arshad (Retd)**  
B-25, G.O.R. No. 3, D-25 Lahore  
Phones : 412642-410065

**North America:**

**Osman Siddiqui,**  
75, Bentworth Crescent,  
Ottawa, Canada  
Telephone: (613) 829/6416

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## U.S. Military Sales To Pakistan

The US-Pakistan agreement on military sales to the latter is not quite like an empty vessel except perhaps in the common property of causing a lot of noise being made. We have yet to see in the Pakistani skies the silhouette of the first F-16 and yet it has caused such a stir across our borders as if it is already there and in action against conjectural targets. Regardless of its unquestionably advanced technology, an F-16, or for that matter, any other aircraft in that class—an F-15 or F-14 or a Mirage-2000—would not by itself make a complete weapon system, unless duly supported and reinforced by a variety of armaments and ancillary equipment to optimise its role as a combat aircraft.

Furthermore, the role of air power in countries like Pakistan and India, chronically and acutely deficient in fuel and funds to keep a modern air force air-borne, can be only limited and scrupulously selective in peace and war. The two Indo-Pakistan wars in 1965 and 1971 brought the air forces of the two countries into prominence more for their spectacular effect than for any substantial contribution towards changing the course of the war. There had been nothing like a pre-emptive strike such as Israel launched in June 1967 to destroy the bulk of the Egyptian air force on the ground even on the first day of the war to make victory a foregone conclusion. There were no para-drops worth the name to disrupt the enemy's communication lines and establish airheads except in East Pakistan where the Indian air force, in 1971, had had practically a one man's show without having to over-tax its professional skill and expertise.

This is not to belittle the operational importance of the two air forces as to highlight their role in the light of past history and underline their limitations in the subcontinental security environment. At any rate air forces without strong and well-muscled ground forces and moderate-sized modern navies are practically ineffective — just so much sound and fury signifying nothing or very little. Wars must eventually be decided on the ground; and an aircraft, unless it has a firm base to return at the end of a successful mission is as bad as lost. It is not without a touch of irony therefore that while all the buzz-and-bruit is being made about the F-16 not much is heard about tanks and guns and armoured personnel carriers, and bridging equipment—above all communication systems without which a war can be hardly fought let alone being carried to a satisfactory conclusion. As for the navy, it looks like the poor relation and is hardly ever mentioned.

All the Indian clamour about the F-16 is strongly reminiscent of a similar adverse reaction to the induction of the F-104 Star-fighter into the PAF in late 1961. The angry debate which the solitary squadron of F-104s had caused in the Indian press and political

lobbies might just as well have equalled, if not exceeded, their criticism of the entire US military aid to Pakistan between 1954-55. The aircraft was painted through the mass media as a sort of ultimate weapon to tilt the mythical strategic balance in the subcontinent that never did really exist nor does. For how can one even talk of a subcontinental strategic balance with a one-to-three ratio in the army, a one-to-four ratio in the air force, almost no comparison between the navies and above all a one-to-seven equation in population and a one-to-three one (India's, 1,229,737 Pakistan's 342,750 sq. miles)?

The gap is so wide and all-encompassing that but for their immutably over-lapping geography and undeniably sordid (though happily short) history of conflict, the two countries might as well have been incomparably apart.

Old ties such as have unquestionably existed between India and Pakistan, tend to become burdensome obsessions unless continually nourished and rejuvenated. And this is, more or less, what seems to have gone wrong with the Indo-Pakistan relations in spite of the periodic display and re-affirmation of goodwill.

The on-going talk about F-16, except for the change of period, is substantially the same as the controversy about F-104 in the early 60's: both emanate from the one and the same fountainhead of common fears founded more in an apochryphal past than in the living present. The 1965 war disproved most of the Indian theories about the offensive character of the US weapons.

The fact remains that unless more public information is made available about the various types of US weapons to Pakistan — and their numbers — it would be practically impossible to assess the package correctly in terms of nuts and bolts. The critics of the arms purchases, be they in India or elsewhere, would therefore be only well-advised to tone themselves down until the first aircraft, the first tank and the first naval vessel arrives. There is many a slip between the cup and the lip and considering the highly volatile regional situation, it is not easy to predict what new power configurations and strategies may materialize to upset the existing equations (Indo-Soviet, Pak-American and so on) between now and October 1982.

A firm judgement may have to be delayed therefore in the interest of justice to Pakistan — for ever dreaming of good things from its neighbours and allies but getting very little in the end. Nuts and bolts, like chicken, should be counted only when they are delivered. At the moment, we can, at best discuss the pros and cons of the US commitment to Pakistan.

First of all, the projected US package, unlike the US military assistance to Pakistan of the past, is essentially a business arrangement under which the US has agreed to re-open arms sales to Pakistan against credits through five years subject to annual congressional approval. It is not to be confused in any way with a grant-in-aid or a gift. What is envisaged is a "military-sales relationship" and not a "military-aid relationship". That is how Foreign Minister Agha Shahi put it in an interview to *Newsweek's* Debra Bonnett (May 11, 1981).



Pakistan would, therefore, be obliged to the US only to the extent of the loan (\$3.5 billion split almost evenly between civil and military components) it gets from the US and not in any other way barring "the confidentialities", if any. It would as such be free to make the best of its hardware in peace and war according to the needs and requirements of its own national security.

Placed as it is today in a geo-strategic labyrinth, it is not easy to visualize from where the threat may suddenly arise to its national integrity and territorial security. And, as in the case of practically every developing country, it could be either from within or from without or both cropping up simultaneously.

That has been true of Iran which, side by side with mounting internal turmoil, is also engaged in a continuing war with Iraq, Lebanon, since 1978, has been faced with a similar situation plagued by perpetual civil strife interspersed with periodic war such as in March 1978 and July 1981. Stability in southwest Asian countries could be extremely deceptive not always for internal tensions and conflicts as for the inevitable impact of mutually-exclusive and often hostile super/major power rivalries around. A combination of internal politics and sensitive geography have rendered these countries quite hopelessly vulnerable to events and incidents outside their own borders. Pakistan belongs to that class of countries and should have the freedom to choose its weapons, political and military, to safeguard its territorial and ideological frontiers.

Pakistan's present arrangement with the US is a purely bi-lateral affair dictated by a fortuitous convergence of strategies in the region in the wake of the Soviet military occupation of Afghanistan. Pakistan has been rightly concerned with the threat which a further Soviet move southward may pose to its own security. The US looks at Pakistan as the last domino between the Soviet Union and oil-wealthy Gulf. Of course there has been always the sanction of history behind the US-Pakistan relationship to make it something distinctly more than a temporary arrangement. The on-going power-play in the region appears to be lending it a deeper meaning and perhaps a greater capacity for enduring growth.

Except for a growing strategic consensus, therefore, there is no quid pro quo attaching to the US-Pak agreement. When some US congressmen talked of "some quid pro quo" to Foreign Minister Agha Shahi during his recent visit to Washington, he made it quite clear that there was nothing of that sort. He re-affirmed that there was no question of Pakistan "swerving in any way" from non-alignment and its commitment to the stand of the Islamic Conference on the Middle East question, the Palestine cause, al-Quds, Gulf security, support to the Islamic revolution in Iran and for the "national liberation movements" in the African Continent.

Regarding the arms deal itself, the foreign minister confirmed that it involved the purchase of weapons from America through guaranteed loans at the "market-related" rates of interest and "no military aid as such was envisaged". Pakistan, he went on to say, had refused to accept a "concessionary" rate of military sales credits at three per cent interest preferring to pay the "normal rate of 14 per cent" in order to protect the "independence of its foreign policy." That was to strengthen ties with the US "within the

framework of NAM and OIC". As for India, it is using NAM, like several other international forums, as a device to get the best of the "two or three worlds".

Mr. Shahi also regretted that the Zionist lobby in America and some other "interested parties" were raising an outcry in regard to the contemplated modest purchases of American arms by Pakistan though these were meant purely for defensive purposes.

In an earlier wide-ranging interview to *Washington Post*, Mr. Shahi stated that military purchases from US would be used "for bolstering the self-confidence" of Pakistan which has to operate under the shadow of 85,000 soviet troops sitting in Afghanistan on the other side of its northwestern frontiers. He also admitted that Pakistan was "frankly worried" whether the administration can sustain its policies in the face of congressional criticism.

Comparisons between Pakistan and Shah's Iran, though inept, are being freely drawn and anti-Pakistan lobbyists gratuitously forewarn the administration against "propping up another Shah." In view of the firm and formal commitment of President Reagan's administration to Pakistan, however, let there be no doubt about the resumption of arms sales against hard cash from October this year and the despatch of the initial consignment on credit an year later within the framework of the five-year military sales programme. One can be only moderately optimistic, however, regarding the full and mutually satisfactory consummation of the entire programme renewable every year by the US Congress.

Furthermore, the time-frame itself is too over-extended to cater for Pakistan's most urgent needs—particularly in its counterattack role. There are certain things that just cannot wait where the air force, armour and artillery are concerned. It is common knowledge that the great bulk of our F-86s—PAF's main work-horse—has, through all-round wear and tear become quite unfit for active service. These must be replaced forthwith if only to maintain the numerical equilibrium of the PAF.

The same goes for the tanks and guns which are only as good as the technical expertise and guts of the user to make them go for beyond their authorised life-span.

As for several other essential items—signals and engineering equipment, second-line (B echelon) vehicles and ordnance stores, the less said the better. The fact remains that, since 1965, more particularly since 1971, Pakistan's armed forces have been in dire need of replacements and replenishment that remains far from being met fully as yet. They are faced with the stark choice either to build or bust. Corps Headquarters, divisions and brigades, unless they are properly armed and trained, serve little purpose in war or peace. Moreover, professional armed forces must be intimately familiar with their arms to bear them well and carry them into war with confidence. Arms hurriedly delivered to the fighting personnel at the eleventh hour could lose most of their technical superiority through inexpert handling. The Arab-Israeli wars, particularly the disastrous 6-day war of June 1967 should teach us a lesson. Even in 1973, left to themselves, Egyptian soldiers could not make as good use of their surface-to-air missiles, anti-tank munitions and tanks as the weapons had been good for.

The time-frame of 5 years thus lends a somewhat unrealistic touch to the whole deal. Put differently, it fails to reflect the sense of urgency that the very air pervading Pakistan's security environs breathe. Pakistan, for sure, is not going to welcome any American soldiers to its soil. Its unswerving commitment to non-alignment and Islamic causes and fraternal bonds cannot permit of foreign bases being either revived (Badaber) or built up here. It does not even mean to enter into a treaty relationship with the US on the lines of the Indo-Soviet treaty of friendship and co-operation of August 1971.

There is no doubt that Pakistan has chosen the strait and the narrow in its strategic formulations and choices. It seeks American friendship without incurring the wrath of the Russians. It seeks security without either treading on the corns of India—its traditional on-again off-again friend and foe—or crossing the path of the Soviet Union which stands at Durand Line breathing down its neck.

How can Pakistan keep so many balls in the air and for how long? The question is best answered by Pakistan's unquestionably realistic posture of peace to all and hostility to none. If America is arming Pakistan against the Russian threat that would be America's own unshared strategic thinking. The fact remains that Pakistan is taking good care not to get itself between the milling stones of the rival superpower strategies in the region like a handful of corn.

As regards India, it is mainly up to it as the senior partner and more advantageously-placed player on the strategic chess-board to lead the way to detente and disarmament in the subcontinent. For while India goes shopping around for arms from whatever source and at whatever price the security climate in the subcontinent will continue to be stirred and agitated by the whirlwind of conflict and confrontation.

**Brig. Abdul Rahman Siddiqi (Retd.)**



# Pakistan And Amercia :

## The Security Dimension

Stephen Philip Cohen

*In the three-billion dollar package of economic assistance and military sales credits over a five-year period, the only specific weapon to be publicly mentioned is the high performance F-16 aircraft. But Pakistan certainly needs assistance in refurbishing its obsolete armour, improving mobility in the mountains, and, above all, enhancing its self-reliance in defence production. Any proposal by the administration must still be approved by congress.*

*From the perspective of Washington, Pakistan is seen as important in two main ways. The first is strategic. It should be added, however, that the American strategic interest in Pakistan is indirect—it is concerned less about Soviet influence in Pakistan than Soviet influence in the Persian Gulf and the Arabian Sea.*

*Put bluntly, Americans would ask the question: What can you do for us? How would your survival further American economic and political interests in regions which are vital to us?*

*The second important American interest in the region is relatively new: non-proliferation. While the US is regarded by Pakistanis as inconsistent on the nuclear issue (and not without some justification), it is still true that this is a crucial issue for the survival of civilized society, and while American policy has been misguided at times, it is concerned with a vital global interest...*

When two states enter into a military relationship they become hostage to each other's fortune. When the two states are of unequal sizes the problem is compounded: The smaller state feels that it may be abandoned by the larger in favour of a more attractive alliance partner; the larger feels

that it may be dragged into a peripheral local conflict by the smaller.

In a nutshell, this is the dilemma that has characterized the US-Pakistan relationship since the early 1950s. The relationship involves the security—if not the survival—



of one of the partners (Pakistan) but was only one of many peripheral ties for the other partner (the US). Thus, the two sides have not regarded their alliance in quite the same way. It is surprising that it lasted as long as it did. Now, however, with Russians on the Khyber it is vital to review the "First" US-Pakistan alliance to understand how a "SECOND" one might better serve the interests of both states.

America's initial involvement with Pakistan stemmed directly from the cold war competition with the Soviet Union and a search for Asian friends and allies. The Soviet Union and China were at first seen as undifferentiated enemies and military support for Pakistan was justified in anti-Soviet terms. Pakistan received over 630 million US dollars in grant military assistance between 1954 and 1965, 619 million dollars in defence support assistance, and some 55 million dollars worth of equipment purchased on a cash or concessional basis. In the same period, India purchased over 50 million dollars in equipment from America, and, after the 1962 war with China, received over 90 million dollars worth of grant assistance (primarily communications and transport equipment, but also some arms production facilities).

**Shifting Policies.** In 1965 programmes to both countries were suspended and in 1967 the US Government developed a new arms transfer policy which has stood virtually intact for twelve years. With the famous "One Time" exception of 1971, it was decided that the US would not resume its position as a major arms supplier (which forced Pakistan to search elsewhere for weapons) and that it would sell weapons, not give them away.

There were several strategic reasons for this shift in policy. One was that the US was deeply involved in Vietnam and all

political relations were held to the standard: "are they helping us in Vietnam or not?" A second was that virtually all American decision-makers had decided that the Indo-Pakistan conflict had diverted both countries from genuine regional accord and that American arms were being wasted. Third, anti-Soviet passions had died down in the US and America was engaged in a crucial dialogue on the control of nuclear weapons. Overall, the strategic and military importance of South Asia (including Pakistan) had plummeted from near the top to dead last (below Africa and Latin America) by the late 1970s.

Of course, this *importance* was measured on an American scale; for Pakistan, its own importance could hardly decline, and indeed, its security situation worsened after the 1965 war with India. Few American decision-makers were aware of this and they were taken by surprise when the successive hammer-blows fell: The 1971 war and the vivisection of Pakistan, the 1974 Indian nuclear explosion, and the 1978-79 coup and invasion in Afghanistan. Suddenly, South Asia had become important in unexpected ways as latent American interests re-emerged. Once again Pakistan is referred to as "Strategic".

**New Deal.** Current talk in Washington revolves around a three-billion dollar package of economic assistance and military sales credits over a five-year period. The only specific weapon to be publicly mentioned is the high-performance F-16 aircraft. But Pakistan certainly needs assistance in refurbishing its obsolete armour, improving mobility in the mountains, and, above all, enhancing its self-reliance in defence production. Any proposal by the administration must still be approved by congress.

From the perspective of Washington Pakistan is seen as important in three ways.

The first is strategic, and we have discussed this above. It should be added, however, that the American strategic interest in Pakistan is *indirect*—it is concerned less about Soviet influence in Pakistan than Soviet influence in the Persian Gulf and the Arabian Sea. Put bluntly, Americans would ask the question: What can you do for us? How would your survival further American economic and political interests in regions which are vital to us? The second important American interest in the region is relatively new: non-proliferation. While the US is regarded by Pakistanis as inconsistent on the nuclear issue (and not without some justification), it is still true that this is a crucial issue for the survival of civilized society, and while American policy has been misguided at times, it is concerned with a vital global interest.

**Some Reservations.** This issue has and will continue to complicate any emergent military relationship with Pakistan, for Americans will quite properly ask why Pakistan needs American equipment when it is reported to be on the verge of producing nuclear weapons. Few Americans wish to be closely tied to a country which is engaged in a nuclear arms race in a region that has already experienced four major wars.

A third American interest in Pakistan is the question of human rights, broadly defined. Because America is not only a *democratic* nation but one with a strong *moralistic* tradition its governments tend to articulate a concern for economic and political freedom. These objectives are fitfully pursued, and inconsistency has lessened the effectiveness of American policy, but the concern is genuine, and has its roots deep in our society.

If these are the central concerns of most informed Americans when they approach

Pakistan, how do they match up with important Pakistani interests?

First, Pakistan has an acute strategic problem: It is faced with a classic two-front situation in which its own lines of communication are vulnerable and exposed to air and ground interdiction and its one major port can be easily blockaded. Pakistan cannot be *defended in depth*, nor can it assume that any major outside power will support it directly in a serious crisis. Pakistan needs enough military power to raise the costs of an invasion to unacceptable levels—implying a substantial conventional military capability vis-a-vis India, and perhaps even the Soviet Union. However, possession of such a capability raises major problems: it may be perceived as an offensive capability by either powerful neighbour and may provoke a pre-emptive war.

Second, it makes sense for Pakistan to pursue the nuclear option and ensure that it will not be vulnerable to nuclear blackmail. Yet, as in the case of conventional force levels, pursuing that option may be seen as providing a Pakistani umbrella for a move in Kashmir (or Afghanistan?) and result in an unplanned catastrophe.

Third, Pakistan also has a *human rights* interest—in particular the development of both an economy and a political system which conforms to shared social values and which provides a reasonable amount of economic growth and political freedom. Here, Pakistan's efforts at Islamization are widely misunderstood abroad, as perhaps the relevance of certain Western values and practices is misunderstood in Pakistan.

**Quid Pro Quo?** If we match up these very diverse and partially overlapping sets of national interests, what military and security policies suggest themselves?



Can—or should—the US-Pakistan military alliance be revived, or do new issues and interests suggest new forms?

*First, Pakistan's security interests and America's security interests are regional in character. It is erroneous to think exclusively in bi-lateral terms when Pakistan's security can be so easily threatened by its neighbours.* Obviously, as Pakistan officials argue, India cannot have a veto over American arms supplies to Pakistan—but Pakistan in turn cannot expect such supplies to be provided without question. Recent Pakistani proposals for mutual discussions of arms levels with India (and other proposals for regional political and economic accord) must be the beginning of a long road leading to a framework in which each South Asian state can protect its own vital interests.

A bilateral US-Pakistan military relationship may be the most fitting vehicle for the necessary modernization of the Pakistani military, but statesmanship must go beyond the piling up of expensive arms and also pursue a policy in which Pakistan's dependence is lessened and its two-front problem is moderated. There is a need for more imaginative thinking in the entire region as to how old territorial disputes can be moderated; this applies as much to the India-China conflict as to the India-Pakistan situation.

Second, the proliferation problem will not go away and it is better that the near—and new-nuclears deal with the issues sooner rather than later, when they are threatened by their smaller neighbours. India and Pakistan need to discuss plateaus and levels of nuclear weapons (hopefully, they can agree on zero levels, but I am not optimistic) and come to an understanding that they will not engage in an arms race. Such races are stable at very high levels but unstable at

lower levels, so both states might be most vulnerable just after they acquire nuclear weapons but before they have developed effective command and control arrangements, delivery systems, hot lines, and so forth. The US might help by providing technical advice on such matters but the new nuclear states will have to guard against becoming too closely identified with one or another superpower lest they become unwitting targets in a surrogate nuclear war.

Finally, even a circumscribed and cautious new US-Pakistan military relationship will not survive the current administration without an acknowledgement on both sides that moral and human concerns are, after all, an important component of any strategic relation. While the selectively fastidious nature of American complaints about Pakistani politics may be well known to readers of this publication, they may not be aware that such complaints are a form of compliment, as they usually imply that things could improve.

Our analysis suggests an affirmative answer to the question as to whether new structures are required for a new US-Pakistan relationship. Pakistan's status as an Islamic power, as a member of the Non-Aligned Movement, and as part of a growing regional consortium all serve its national interests, and, I would argue, America's long term interests in developing a stable, secure and independent South and Southwest Asia.

America's concerns with Soviet aggression are shared by most regional states, and specific bi-lateral arrangements to meet such aggression can be coordinated with regional and sub-regional efforts to reduce conflicts between the states that have not fallen under Soviet domination. All of this implies a much more active and continuous

relationship between America and Pakistan and America and Pakistan's neighbours: not a return to the days of crude balance of power politics. That system implied periodic war (to adjust the balance) and relatively complacent populations. Security relationships were formed and broken to suit the convenience of individual partners, who were roughly equal in size. None of these

conditions exists in this era of nuclear weapons, mass politics, and economic crisis. Genuine security relationship must incorporate these non-military elements while still accommodating the legitimate security interests of each alliance partner. Only such a tie will endure, for it serves the enduring interest not only of states, but of people.

Stephen Philip Cohen is Professor of Political Science and Asian Studies at the University of Illinois at Urbana, where he has been on the faculty since 1965. He received the bachelor of arts and master of arts degrees from the University of Chicago and earned a doctorate in political science from the University of Wisconsin.

Cohen has been a visiting professor at Keio University, Tokyo, Japan, and Andhra University, Visakhapatnam, India. His major research interests are in Asian security and defence problems and American policy in the region.

He is the author of *The Indian Army* (California, 1971), *The Pakistan Army* (forthcoming), and co-author of *India: Emergent Power?* (Crane, Russak, 1979) and *The Andhra Cyclone of 1977* (Vikas, 1979).

Cohen is currently co-director of the University of Illinois, Office of Arms Control, Disarmament, and International Security.

Prof. Cohen has written this article specially for *Defence Journal*.



## Pakistan Arms Purchase Deal with the U.S. and its Politico-Economic Impact

Lieut. Gen. M. Habibullah Khan Khattak (Retd.)

*A Former Chief of Staff, Pak Army.*

*...Geographically, we had India, Burma, China Afghanistan and Iran as our neighbours. Our coming into being was accepted with great reservations by India, and its leaders, expected us to come very soon crawling begging to be taken back as part of India.*

*In 1949 our then prime minister received an invitation, from the Russian Government, our nearest superpower neighbour, to visit them. The invitation was used as an implement to extract a similar invitation from the USA, a country which he eventually visited.*

*The invitation from Russia, 300 miles away, was neglected and he flew then thousand miles to USA which annoyed the Russian Government immensely.*

Today's discussion on the Pakistan Arms purchase deal with the US and its politico-economic impact, has a status of a 'post mortem' rather than a free, fair and uninhibited discussion of the topic. However, to carry a successful post mortem one must have studied or known something about the anatomy of the subject. Hence to be able to have fruitful discussion, a short gallop of 34 years of our eventful history is necessary! So please bear with me if I take you, rather rapidly through the past events.

Our country was carved out of India on midnight at 14th/15th August 1947 and comprised of two segments. We pro-

claimed ourselves the biggest Muslim nation in the world and called ourselves the fourth largest country, to the annoyance of many other nations.

Geographically, we had India, Burma, China, Afghanistan and Iran as our neighbours. Our coming into being was accepted with great reservations by India, and its leaders, expected us to come very soon crawling, begging to be taken back as part of India.

**Opportunity Missed.** In 1949 our then Prime Minister received an invitation, from the Russian Government, our nearest superpower neighbour to visit them. The in-

vation was used as an implement to extract a similar invitation from the USA, a country which he eventually visited. The invitation from Russia 300 miles away was neglected and he flew then thousand miles to USA which annoyed the Russian Government immensely.

In 1951 at the time of the Korean War though we had joined the American camp, yet when we were asked to help out, we first agreed to send a composite infantry brigade, but ultimately sent a few thousand tons of weavel-eaten wheat instead, which at its destination caused great embarrassment to all concerned.

The Turks sent a full-fledged brigade, which with its great fighting ability brought glory to its country and incurred eternal gratitude of USA.

In the fifty's we joined the 'Baghdad Pact,' later known as the Central Treaty Organisation, and Seato (South East Asian Treaty Organisation) and tried our best to be included in the North Atlantic Treaty Organisation, but did not succeed.

Both the treaties, the Baghdad Pact and Seato were meant to protect the member countries from aggression and invasion from communist countries only.

It was the wisdom, forethought and political acumen of the then Prime Minister Shaheed Suharwardhy to befriend China. They have proved to be wonderful staunch straight forward allies and may they long remain so. You will notice that so far I had avoided naming personalities but I have deliberately mentioned Suharwardhy's name because a number of other personalities have laid claim of being the architects of China-Pakistan amity. The

credit goes entirely to late Mr Suharwardhy and no one else.

The other reason of China getting closer to us was due to the arrogance shown by the then Indian Prime Minister at the first Bandung Conference towards Mr Chou-En-Lai, the Chinese prime minister. Later Pandit Nehru's rash orders to the Indian Army to "Throw out the Chinese who had the audacity to peep over the McMahon Line resulted in the Indo-Chinese War. I believe the NEFA Forces of the Indian Army, when counter-attacked by the Chinese, did not look back till they reached their divisional headquarters.

**65 War.** Since the ceasefire of 1949 in Kashmir the Indian leaders had repeatedly stated that any armed insurrection in their part of the held Kashmir by us will be treated by India as an attack on Bharat.

The 1965 war is the only war fought in the human history in which both sides claim to have won. In my opinion both sides lost and lost badly.

I have discussed at great length the 1965 war operations with an Indian four-starred general at the Savoy Hotel in London. I was very interested to know the story from the Indian side as I had a lot to do with our defence plan prior to my retirement from the Army. The Indian General's last words to me after four hours of discussion were: "K" as he called me, "do not have such a long face, we also had Musas on our side".

After the 1965 war our then President visited USA and saw late President Johnson, who, after hearing his diatribe told our Field Marshal: "Look Mr. President why did you not consult us at the



time of take off rather than at the crash landing stage". The Field Marshal told me he could say nothing after hearing these words.

**1971 Crisis.** Then came the 1970/71 debacle. I do not call it a war but the greatest political Folly of our times. The day the constituent assembly was postponed I met late Gen. Yahya in what is now the Sind Governor's house and told him you have today created Bangladesh!

It was very noble of Yahya not to have thrown me out of the President House, because I very seldom lose my temper but in military terminology that day I let him have it as I used to do in my army days when he was my deputy on several occasions. The only difference that day was that he was as he used to say wearing four hats including one of the President of our country and I was mere Habibullah.

A number of our friends including the Chinese leaders and the American President impressed on Yahya that the East Pakistan and West Pakistan quarrel needed a political settlement and not a settlement by force of arms; but less said about the disgraceful episode the better.

In December 1971 a civilian gingerly arrived on the scene. Again human history was created. And as a head of state he proclaimed himself: "Chief Martial Law Administrator".

He called himself the popularly elected leader of the country, but I said it then and say it now he was an elected Opposition leader only. Being fair to him he did tell me if you army generals can adorn dress of legal rulers, what if I called myself chief martial law administrator? He had a point.

After alleged rigging of our national elections in 1977 and great civil unrest for several months, on the night of 4th/5th July 1977, he was removed from the premiership and the martial law was declared. As in the past, it was very orderly, peaceful changeover, and hailed by many.

**Soviet Invasion.** On the night of 27th/28th December 1979 a great international event took place on our North Western border. A great mass of Russian troops marched into Afghanistan on the invitation of the then Afghan Government. Suddenly from being an unimportant speck in the international power arena, Pakistan assumed great importance. Both the superpowers started flirting with us. According to the political fashion of those days, Pakistan clad itself in the regalia of being a non aligned nation, a word which carries an aura of respectability these days as in the fifties belonging to some Pact or the other did. In addition we have identified ourselves with Muslim countries.

As far as the political impact of arms deal is concerned, I have very little to say. I presume most of you must have read the text of interview General Zia-ul-Haq gave to Mr Rajendra Sareen of the Indian Weekly *Sunday* which appeared in *Dawn* of Thursday 30th July 1981, which has very exhaustively explained what impact, if any, the arms purchase will have on our foreign policy. It is a very sober and knowledgeable exposition of Pakistan/USA political relations and the impact the arms aid will have on us.

**Conclusions.** The last part of today's discussion is the economic impact.

If the approach of our Government in the utilization of the economic aid is going to be in the same old fashion as it has been

to the tackling of the past regime era economic problems then in my opinion the impact will be nil. Those old pundits of the government will channelise funds through the outmoded restrictive rules and regulations. Anomalies will be created and at every step new obstacles will be placed by the bureaucrats, thus strengthening their already choking stronghold. But if the government will let free enterprise have its reins, I can see new vistas of prosperity opening for the country. The businessmen and labour who till today have been dubbed by all kinds of unfair names are no better or worse than the other cross section of our nation. They have the resilience, stamina and ingenuity but none of them is given a chance to prove their worth. Please give them a chance and see how they blossom.

After all when free enterprise was encouraged during the Ayub regime did they not far exceed the expectations of every one and did our country not prosper both industrially and economically much to the surprise of other nations and was it not quoted in the international corridors as an example to others.

In the end we shall be grateful to Almighty God that today a great country like USA has stretched its hand of friendship and offered us substantial help and not 'Peanuts'. Should we not grab this opportunity with both hands? Much of it I attribute to Gen. Zia-ul-Haq's Tahajjud and five time prayers rather than to our great diplomatic manoeuvres. I am sure it all augers well for us.



## An Economist's Viewpoint

Prof. Mahmood A. Faruqi

*Senior Member of Pakistan Banking Council.*

*The physical content, i.e. composition of economic aid, is not known. What is the timing and quantity of capital goods, raw materials, consumer goods and developmental capital in the economic package? Similarly, the extent and scope of deterrent quality of military equipment remains undisclosed, though one hears of F-16 which, without engine specifications, and the ancillary paraphernalia, hardly conveys anything—even if their number is talked about. In any case, when a tank costs about \$2m and a plane around \$20m, one wonders what \$400m annual release can buy and whether the equipment is anywhere near requirements, which, at 1980 prices, is reported to be nearer ten than six billion dollars.*

*Hence even if the envisaged military package is disbursed, it is doubtful if the balance of military power in the region would have noticeably, much less critically, changed. For one thing, the 1.6bn 25-year 2.5 per cent loan (giving Russian T-72 tanks, MiG-23 & MiG-25 planes worth reported \$8 bn), the British Jaguars worth \$2 bn, the new French Mirage worth 4 bn already increase Indian massive militarisation programme to \$14 bn. This alone — Afghanistan notwithstanding — alters the military balance of power in the subcontinent, forcing Pakistan to review its defence capability.*

Defence deals, anywhere, cannot be substantially disclosed. Information gap is a therefore limiting factor in any discussion.

The US package of military sale and economic assistance to Pakistan, seen not in its fullness but merely as a capital

additive instrument, is, useful—Afghanistan problem notwithstanding, because:-

(a) Pakistan's ADP financing for 1981-82 envisages 70% (raised from last year's 50%) reliance on external assistance (6114m internal resources against 14206m external

assistance). The resource gap in 1981-82 is Rs. 9.2b (29.5 minus 20.3) raised from Rs. 4.3b last year, or an increase of 112% in one year.

(b) Last year, only the non-development defence services expenditure was Rs. 15.2b which is budgetted at 17.7b 1981-82. In both years it is about 48% of the total non-development expenditure.

If despite antiquated defence equipment, Pakistan spends about half of its total non-development expenditure on defence, then the clear choice is against status quo: either modernise equipment, or reduce non-development defence expenditure. The US package would release resources, in cash or kind, to partially relieve the resource gap strain and to improve Pakistan's combat capability by better mix of men and machines...

The financial contours, if vague, indicate the following outline:

	AMOUNT IN bn \$
<b>Inflow</b>	<u>3.2</u>
(5 years)	
Military equipment ...1.6	
Economic Aid ...1.6	
<b>Repayment</b>	
(30 years after first 10 year grace)	<u>4.7</u>
(i) Military equipment ...3.9	
(14% interest,—1st instalment 1992—last instalment 2012 (AD))	
(ii) Economic ...0.8	
1 bn is grant, remaining 0.6 to be repaid as in (i) with 4% interest	
Repayable amount = original amount Plus 46%.	

This would require generating future resources based on well-conceived and properly planned economic policies monitored on consistent appraisal criteria.

The physical content, i.e., composition of economic aid, is not known. What is the *timing and quantity* of capital goods, raw materials, consumer goods and developmental capital in the economic package? Similarly, the extent and scope of deterrent quality of military equipment remains undisclosed, though one hears of F-16 which, without engine specifications, and the ancillary paraphernalia, hardly conveys anything even if their number is talked about. In any case, when a tank costs about \$ 2m and a plane around \$20m, one wonders what \$400m annual release can buy and whether the equipment is anywhere near requirements, which, at 1989 prices, is reported to be nearer ten than six billion dollars.

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**Carter Package.** Carter package terms are even less known. It would, however, appear that present package is larger and longer (from 400m in 2 years to 3b in 5 years). The geo-political regional changes since then, give the present package better timing, sus-



picion is less credible that Pakistan is an arms conduit for Afghan *Mujahideen*. Then, there was relatively greater vulnerability of Pakistan to become an arena of super power rivalry. Since then, some corners have been rounded off.

It would neither be right nor fair, not to compliment our negotiators for consummating sensitive negotiations. However, it may be stated that in December 1979 the geo-political gestalt of the region changed, but *not for Pakistan alone*. The commonality of interest between Pakistan and the West is return of Soviet forces. The Western interest is containing overt or covert Soviet expansion in the Middle East. Pakistan's interest is not merely provisioning against being a front-line state, but preservation of its security and sovereignty by repelling threat from any quarter. *It is arguable whether America has reasonably met Pakistan's interest rather than serving its own interest of containing Soviet expansion.*

The West should recognize that a stronger subcontinent is not necessarily a stronger Pakistan, although the converse is nearer truth. They must realize that even if, if at all, Soviet forces return from Afghanistan, status quo ante will not quite be restored. The politics and pattern will not be the same, the Durand Line may become more explosive, or at least catalyse incursions on other borders.

**Non-Treaty Status.** Although unambiguous answers can hardly be expected, it would appear that the balance of advantage would be determined from questions, such as: Is the arrangement not a treaty because:

(a) It would militate against Pakistan's non-aligned status? Soviet friendship treaties with India and Cuba have apparently not decimated their NAM status.

(b) It would force Pakistan to act as the axis in US design for Gulf security equilibrium.

(c) A pre-condition was Pakistan's explicit promise to concede bases—Badaber regained, Gawader and Ormara to be explored.

(d) US executive was unwilling to seek Senate ratification because it would not risk eye-brow raising by our hegemony happy neighbour.

The five year period commencing October 1982 may not be an unmixed blessing. Whilst providing a durable US relationship, it also, and perhaps more importantly, commits Pakistan to a distant superpower whose track record in the Middle East and Far East is not highly enviable, partly because its primal sphere of influence is another continent.

Although, the June 15 Islamabad statement spoke of "seriousness and immediacy of the threat to Pakistan's security." Action does not commence (if at all, and after annual congressional approvals) until October, 1982 and languidly sprawls over five years. Does this time frame mean that:-

(a) Pakistan's military equipment absorptive capacity cannot bear a faster input? or

(b) US is not particularly keen for a faster rate? The 1962 Soviet massive and speedy military build up of Indian defence may be recalled.

Conceptually, whilst military equipment supply power provides leverage in influencing recipient's foreign policy, the power of debt relief provides directional gearing

power over recipient's economic policies. The package envisages Pakistan's indebtedness until year 2012.

**Nuclear Programme.** The June 15 statement does not explicitly mention nuclear programme. Pakistan, at last, has seemingly satisfied others that it is not making a nuclear weapon but is merely keeping a nuclear option. It would, I think, be incorrect to interpret the package as a shift of US policy from nuclear non-proliferation to anti-Sovietism. The annual congressional approval as a condition precedent to disbursement is eloquent in its brevity.

**Alternatives.** Terms along following lines could be considered in future dialogues, for making the package more meaningful:-

(a) Recognition that arms are not an end but means to an end: Pakistan's security and sovereignty.

(b) Suitable debt relief towards outstanding US debts to reduce repayment burden of the present package.

(c) If equipment pricing has to be at market rate, Pakistan be assisted to shop in the international market, i.e. to the seller the primary consideration be economic gain rather than political orientation. As it is, Pakistan does have British, Chinese, French and other equipment, and the product mix might not necessarily be distorted by international shopping option. Private enterprise without competition is a curse. Defence supplies, without diversified sources, have their own problems.

**Economic Imperatives.** The package, committing \$ 3.2b, if disbursed, obligates repayment of \$ 4.7b. Commitment is not necessarily disbursement. Between 1950 to 1980, overall commitment to Pakistan was

\$ 17.8b but total disbursement was \$11.1b (62.3%). We repaid 2.5b and 8.9 b (32% of GNP) remains outstanding as on 31-12-80. If this figure looks small, the figure for December 1971 was only \$ 3b and for June 1977, \$ 6.3b.

Although aid appears almost interest-free, the added capital does not always yield a satisfactory incremental capital output ratio, resulting in strains on debt-servicing. This, in Pakistan, increased from \$ 193m in 1972-73 to \$ 589m in 1979-80, or an increase of 205%. This increase has deteriorated the amount of aid inflow net transfer as a percentage of gross disbursement: From 75% in 1974-75, it dipped to 56% in 1977-78 and is estimated at 34% for 1980-81. The \$ 3.2b package will compound problems of increased debt servicing and reduced net transfer which will become more acute due to additional \$ 1b annual consortium assistance, the resort to IMF facilities and annual short-term loans for balance of payment support which are syndicated on commercial rates.

Unfortunately, in economics, as in mathematics, new, easy solutions to old theorems are rare. Tested, if painful, paths have to be trodden: to make the package, and its economic management more effective, Pakistan has to increase:

(a) *Savings:* Savings ratio has fallen from almost 13% in 1970 to around 6% in 1981. Marginal rate of savings has to be endeavoured to be higher than the product of growth rate and the incremental capital output ratio.

(b) *Ratio of export to import:* Despite increasing exports, this ratio remains less than 50% for the last six years except for 55% in 1975-76. The marginal export ratio



has to be endeavoured to be higher than the marginal import ratio. The export-based import capacity has to be increased.

(c) Capital absorptive capacity of the economy by increase in technology, productivity and investment climate.

The above, indeed, is what Pakistan planners have to do anyway. After all, the

\$ 400m annual inflow is less than one-fifth of the annual remittances sent by overseas Pakistanis.

In the historical sense, therefore, the package is not by itself, event-making. Its true import is as an opportunity to Pakistan to exert influence on changes in regional developments and by the synthesis of this interaction, protect and promote its national interest.

## A New Concept In Bilateral Relationship

S. S. Jafri

*President Motamar-ul-Alam-al Islami Karachi.*

*It is an open secret that ever since 1971, after the debacle in what was East Pakistan, Pakistan's armed forces have been on outdated, obsolescent and diversified equipment. Pakistan has been forced to attempt to modernise its arms by obtaining it from a variety of sources all over the world which has posed grave problems for training and replacement.*

*During this period India taking advantage of Soviet-India friendship treaty has entered into an agreement with USSR which effectively provides assistance to India to buy arms and armament of the value of 8 to 10 billion dollars. In addition India has the capacity to produce arms and equipment from its own factories of the value of 2.5 billion dollars. Indian forces are equipped with MiG-21, MiG-23 and purchases and manufacture of Mirages-2000 and Jaguar.*

*In this context it is relevant to keep in mind that the prices of defence equipment have rocketed sky high. A tank such as is required by Pakistan costs 2 million, a fighter 20 million dollars. No wonder Drew Middleton in New York Times described the arms agreement "a frail shield"...*

The joint Pakistan-US statement of 15th June, 1981 has been claimed to be A New Concept in Bilateral Relationship. Its main ingredients are that over a period of 5 years Pakistan will receive a credit of about 3 billion US\$ of which one billion are economic aid at special concessional rates and terms and two billions would be in the line of credit at the prevailing rate of interest of 14 per cent which would be used to buy arms and armaments in USA. It would be effective October

1982 after congressional approval and would be subject to further congressional approval every year.

*There is no alliance like Seato, Cento or Mutual Security Pact; no base will be provided to USA like Badaber base under the old pact which theoretically is still extant.*

In line with the new understanding the embargo on purchase of armaments in USA by Pakistan has been lifted and by mutual



agreement Pakistan will be entitled to purchase essential armaments between now and October 1982 out of its own cash resources. It may require an amendment to Symington amendment to enable Pakistan to receive "aid" despite its nuclear programme. Both sides have claimed and asserted that there is no Pakistani 'quo' for American 'quid'.

Immediately following the joint communique President Reagan in a public statement referred to Pakistan's "very strategic position" and affirmed that interest of Pakistan and US converge as "a strong and independent Pakistan is in mutual interest of US and Pakistan." It would be pertinent to mention that a day before the joint communique President Zia-ul-Haq of Pakistan in an interview to an Indian weekly observed: "I reject with all emphasis at my command that there is any propensity on our part to align ourselves with the objectives of US policies." In several public pronouncements Foreign Minister Agha Shahi has taken pains to emphasise that Pakistan holds dear its membership of non-aligned organisation and Islamic Conference and would continue to adhere scrupulously to its commitments to NAM and Islamic Conference ideals and objectives.

It is in the above background that the implications of the agreement can be analysed.

**Implications.** It is an open secret that ever since 1971, after the debacle in what was East Pakistan, Pakistan's armed forces have been on outdated, obsolescent and diversified equipment. Pakistan has been forced to attempt to modernise its arms by obtaining it from a variety of sources all over the world which has posed grave problems for training and replacement. During this period India taking advantage of Soviet-India friendship treaty has entered into an agreement with USSR which effec-

tively provides assistance to India to buy arms and armament of the value of 8 to 10 billion dollars. In addition India has the capacity to produce arms and equipment from its own factories of the value of 2.5 billion dollars. Indian forces are equipped with MiG-21, MiG-23 and purchases and manufacture of Mirage-2000 and 200 Jaguars are in the offing.

In this context it is relevant to keep in mind that the prices of defence equipment have rocketed sky high. A tank such as is required by Pakistan costs 2 million, a fighter 20 million dollars. No wonder Drew Middleton in *New York Times* described the arms agreement "a frail shield". He quipped "400 million dollars per year to spend on armaments in USA is like entering Tiffany with 2 dollars to buy an anniversary present" and yet even this modest and wholly inadequate programme has raised a howl from across the border because it envisages purchase of some F-16 planes!

**Pakistan's Options.** While many questions arise with regard to the implementation and impact of the arms purchases agreement the first thing to consider is whether we have any option. Our debt burden is admittedly horrendous and to add a liability of two billion dollars at 14 per cent rate of interest, which would effectively mean nearly US\$2.13 cents to be paid for every dollar obtained on credit, is going to be a terrible burden. The geopolitical situation in which we have been forced to find ourselves is not of our seeking. We are not blessed with oil income. The assistance which we have been able to get or which we may hope to get from friendly Islamic countries, though very generous and very welcome, is hardly sufficient to meet our basic economic and defence needs. Arms alone do not provide security but by the same token being unarmed does not

guarantee freedom from aggression in this topsy-turvy world and yet it would be fatuous to imagine that we can rely for our security only on promises from powers to come to our assistance or on our membership of NAM and Islamic conference. The offer from USA for credit to buy arms could therefore hardly be spurned.

It is necessary to shed any illusions that this modest attempt to modernise our defence forces would provide a shield against Soviet invasion if it comes about. Here it is necessary to enter a caveat that we do not have any and should not have any quarrel with USSR. The present writer is not convinced that Soviet invasion of Afghanistan came about in pursuance of the century old Czarist ambition to reach warm waters of the India Ocean. Rather USSR over-acted sensing danger to its soft under-belly namely the Islamic States in the South of USSR.

It has been estimated that about the year 2000 A.D. the Muslim population in USSR would reach a figure of 35m and within the Islamic revolution in Iran and possibility of a truly Islamic Government in Afghanistan USSR got into a panic in invading Afghanistan. It is true that events have their own momentum but great credit is due to the foreign policy makers of Pakistan for keeping their lines of communications with USSR open. Economic collaboration between USSR and Pakistan have not only continued but have grown which is a matter of great satisfaction. The present writer feels particularly gratified that the gigantic Karachi Steel Mills Project, which an writer had the honour to initiate as the first Chairman of the Pakistan Steel Mills Corporation, is now going to start this very month with the operation of the blast furnace on 15th August 1981.

One of the unfortunate results of the agreement seems to be that notwithstanding the tremendous defence potential of India buttressed by Soviet aid referred to above India has chosen to make this an occasion for making a massive increase in her arms and already there is talk of obtaining MiG 25 from USSR. Indian Planning Commission has announced that priority economic programmes will be shelved to provide resources for additional defence expenditure. USA too partly in an attempt to mollify India has allowed India to make special purchases and indeed apart from missiles and guns the possibility of India obtaining F-16 from USA is also being dangled. The recent efforts to mend fences with India will have therefore to be redoubled as an arms race is going to do no good to the region, neither to India nor to Pakistan.

**No Firm Time-frame.** The weak part of the agreement is that no firm time frame has apparently yet evolved. Whether it was wishful thinking or otherwise Pakistani side had evidently believed in talks with Mr. Buckley that an agreement would be reached with USA for early supply of essential equipment. When however the delegation led by secretary-general visited Washington it was given out that the lead time for F-16 planes was 42 months and even the tanks could not be obtained! There has been some improvement as recent indications are that the time for F-16 plane has been reduced to 24 months and half the number of requested tanks can be supplied. What is difficult to understand is that in the context of US emphasis on Pakistan modernising its forces in view of "its very strategic position" why could not the lead time be reduced further and also why in case US manufacturing facility could not cope with urgent requirements of Pakistan the credit could not be released for utilisation from world-wide sources.



Another point which it is difficult to comprehend is that while Pakistan had earlier urged for discount to be given on the posted prices of the equipment to be purchased as had been allowed to India by USSR, why Pakistan did not accept the offer for special low interest rates for the part of the package concerning defence. It has been argued by Pakistan side that acceptance of concessional interest rate will have compromised Pakistan's independence and stand in the non-aligned movement. Considering that it is the case of the Third world that industrialised countries of the North must make credits available at concessional rates of interest and on acceptable terms there need have been no fear that Pakistan's position would be compromised.

One seriously hopes that the new US administration under President Reagan has really turned a new leaf in American foreign policy but the criticism of James Reston about "casual US foreign policy" is not altogether irrelevant. It was in January 1980 that the US Defence Secretary, Harold Brown visited China and promised that China would be able to buy arms from USA but no equipments have been delivered to date and the Chinese foreign minister is to visit USA consequent on new assurances by Secretary of State Alexander Haig.

It was on 20 Oct. 1978 that Under Secretary for Political Affairs David Newsome observed "many think US as central actor in responding to a perceived threat (in Middle East). We fully understand these concerns. Others should not

underestimate American resolve". A year later came Soviet invasion of Afghanistan. America announced embargo on grain sales to USSR only today the agreement for sale of 6-8 million tons of grain has been reaffirmed! The mood of the Congress in USA is not always easy to fathom or anticipate and the yearly congressional approval for the implementation of the agreement under discussion makes it difficult to feel confident that there would be no hiatus in its implementation considering that Pakistan is firm on carrying on with its peaceful nuclear development programme, steadfast in its opposition to Israel aggression and firm in its identity with Islamic and Arab aims and ideals. One need not fear another yalta but it is sincerely to be hoped that US administration which has displayed a praiseworthy recognition of the principles and convictions which guide Pakistan's foreign policy would succeed in bringing home to American public opinion and American Congress the need for consistency and continuity in American foreign policy.

All said and done the agreement must be considered as a triumph for Pakistan which has been achieved with real dignity and skill. The need is now to convince all concerned, India and USSR in particular, that Pakistan wants peace, that the agreement is only designed for innocuous purposes of revamping and modernising Pakistan Armed Forces which was long over due and that Pakistan will leave no stone unturned to find political solution for Afghanistan imbroglio in the hope that South Asia will be a region of peace and not a powder-keg.

—The above speeches were presented at a seminar organized by *Business Recorder*, Karachi, on Aug. 6, 1981

## BOOK REVIEW

# India's Avoidable Dilemma

Hafeez R. Khan

### NUCLEAR MYTHS AND REALITIES — INDIA'S DILEMMA

Edited by K. Subrahmanyam, Director, Institute of Defence Studies and Analysis, New Dehli, ABC Publishing House, New Dehli. 1981, pp. 290—preface (i) to (x), Annexures I to III, from pp. 240-274, Index from pp. 275-290.

"India's atomic energy programme has not quite run aground but the progress during the last five years has been so slow that it almost seems static," lamented an Indian writer in the middle of May, this year i.e. about the time or soon after the book under review was published. Subrahmanyam's Preface 'India's Dilemma' is dated April 1981. Since 1974 the writer says "the department of atomic energy has lost the momentum due to a combination of factors...The emergence of a restive officers association at the Bhabha Atomic Research Centre, industrial unrest in several of the Atomic Energy Com-

mission's commercial enterprises and personal feuds at the top levels of the AEC's hierarchy demoralized, confused or diverted most of its dedicated and talented cadres. Conventional industry—could not manufacture huge pieces of nuclear hardware to stringent specifications in good time. The general financial stringency that followed the poor or indifferent harvests of 1973, 1974 and 1975 and the oil price hike at the end of 1975 instead of stimulating interest in atomic power, had just the opposite effect.

Above all, it was the failure of political nerve that robbed the atomic scientists of a sense of direction and pride in achievement known after their successful bang in the than desert, they had let it be known that PNEs, (peaceful nuclear explosions) to be meaningful, must be conducted in a series. In fact, many of them were looking forward to preparing for a bigger bang by setting off a hydrogen device or a hybrid



system that would combine fission with fusion. There was search for suitable sites and collaboration with relevant commissions and departments "in the belief that a test would be conducted every six months or so for reaching copper, in stimulating oil and gas wells, blasting tunnels, excavating canals or training rivers". Another significant development was the interest in all the four enrichment processes—the *centrifuge*, *gaseous diffusion*, *the laser* and *the nozzle*. The problem the Indian scientists felt, needed to be solved not merely for peaceful uses but also for defence purpose. "The quest for self-sufficiency in fuelling Tarapur and the fast breeder test reactor then under construction at Kalpakam also spurred this effort."

**N. Politics.** But soon politics, steep inflation, railwaymen's prolonged strike and political turmoil that led to the emergency in June 1975 impelled the government to give a low priority to the atomic energy programme and all of the AEC's ambitious projects were put on "a carry on footing". No time bound targets were set and the kind of political and financial support needed to "ensure fruitful collaboration between AEC and industrial enterprises was simply not forthcoming".

Discounting that there were "pressures of Western powers" during 1974-75 on New Delhi "to break the momentum" it had built during the previous decade in the nuclear field, K.C. Khanna writing in *The Times of India* May 19, 1981 on "*Future of Nuclear Power: A Question of National Commitment*" observes:

"...The immediate official reaction in the US, West Germany and Britain to the Indian test was surprisingly mild. The head of the French atomic energy establishment in fact, sent a cable of congratulations to the AEC's chairman, Dr. Homi Sethna.

Neither the Soviet Union nor China reacted adversely to the Indian test. Both kept mum. With the solitary exception of Japan, there was no official protest from any major member of the Western alliance". Khanna refers to Ted Greenwood "an American zealot in the cause of nuclear non-proliferation" noting at the beginning of 1977: The United States accepts India's disclaimer of weapons intentions. This is a prudent stance insofar as the United States wants to maintain disincentives against India developing nuclear weapons systems. Indeed to the extent that private or official commentators on Indian nuclear explosion emphasise the distance between a single or a small number of explosions and significant military capability the value of the Indian test would seem to (and therefore really will) diminish. Was it a mere "coincidence" one may ask that economic aid to India by the Western industrial states was increased by some \$200 million in less than a month after its nuclear explosion. "It was not till the summer of 1977 that the pressures from the Carter administration to stop India in its tracks really began to be felt".

The delivery of fuel for Tarapur was linked by the Americans to the acceptance by India of full scope safeguards. The *Janta* government "flatly refused to do any such things". But "its attitude towards scientific endeavour in every field, including atomic energy, was unfavourable, if not positively hostile". Mr. Morarji Desai "ruled out the development of atomic weapons even if Pakistan goes nuclear... the AEC's efforts, towards uranium enrichment recieved a further setback".

The coming back to power of Mrs Gandhi "with its forward looking policies, once again revived the enthusiasm of India's atomic scientists and it can be safely assum-

ed that plans both to enrich uranium and extend the country's nuclear option are being speeded up". Whole-hearted backing of industrial and transport undertakings is urged and the government asked to impress on them "the need to give the utmost priority to the task". Presently, the writer says "delays in the manufacture of equipment by private and state-owned enterprises for the AEC'S projects often exceed the period stipulated delivery by a hefty margin". The situation he concludes "can improve only if there is a national commitment to push ahead in the critical area of this demanding technology".

On July 10, Mrs. Gandhi, as reported by VOA and BBC, sharply criticised the US. sale of F-16 fighter aircraft to Pakistan and said this could endanger peace in the region.

#### MRS. GANDHI ON F-16's

Addressing a press conference, her second since she came to power again, she expressed India's concern over the growing strength of the Pakistan Air Force. Setting a new standard of political rhetoric, she called its existing striking capacity three times more than that of India. F-16, she said, represents the induction into this region a class of aircraft a generation ahead of anything operating with other air forces of the area." In the "offensive role, it can go much further and can carry bigger bombloads." Our entire country, she said, "is deeply concerned that Pakistan is acquiring such sophisticated aircraft." Not only that, reiterating India's recognition of Pakistan's "legitimate right" to acquire arms for its defence, she continued, but "when you make a big jump it causes tremendous concern among *our neighbours*" (emphasis added).

The Indian media not only took up the line but came out with various tension

producing stories, duly contradicted by the Pakistan foreign minister and the foreign office, demonstrating an attempt to keep the whole hullabaloo in a low profile. Keeping the fact that a Pakistani mission is in the United States giving final touches to the deal with that country, it may be assumed that the Indian campaign is directed toward that deal. Mrs. Gandhi's reference to the desirability of improving relations between her country and Pakistan may be a signal that that development would be related to the quantum and sophistication level of the US arms supply to Pakistan.

The new developments in the Pak-US relations have come about at a time when the stock of Pakistan is unprecedentedly high globally, because of the situation in Afghanistan and Pakistan's response to the challenge produced by it, including the generosity shown to the over-2 million Afghan refugees. But at the same time, the media, particularly in the United States, is demonstrating, according to many experts, an unprecedented hostile attitude towards the Islamic world. And the complex and intertwined interest groups within the United States impinge greatly upon decision-making. By raising the spectre of destabilization as a result of the proposed arms supplies, while at the same time offering the carrot of improved relations with Pakistan, if the supplies are kept at a level acceptable to India, India may hope to curtail or slow down the proposed flow of arms supplies from the United States. On the face of it that could be the Indian game. But would that be all?

In the press conference Mrs. Gandhi had some other things to say besides F-16s and the comparative strength of the air forces of India and Pakistan which would have surely baffled the authoritative Institute of Strategic Studies, London. Asked if Pakistan acquired nuclear capability India



will also embark on another nuclear explosion, Mrs. Gandhi reportedly said India did not believe in checking the arms race by taking recourse to production of nuclear weapons. In the same breath she said India's fifth nuclear reactor is being planned, the second unit of the Rajasthan Atomic Power Station was now in operation and the Kalapakkam and Narora projects were in an advanced stage.

Taken in isolation this progress report on nuclear achievements may be looked upon as part of a confidence-building, morale-boosting exercise. But when it is placed in the context of India's nuclear policy it acquires different meanings. On April 9, 1981, winding up the debate on the demands for grants for the ministry of defence, Mrs. Gandhi declared that it should be clearly understood that development of nuclear weapons by Pakistan will have grave and irreversible consequences for our subcontinent. She said "we are fully aware of our responsibilities and the House can be confident that we shall respond in an appropriate way to any development. Our own policy has been to use nuclear energy only for peaceful purposes and we crusade for the total banning of all nuclear weapons." This has been the traditional Indian approach demonstrating an attitude of mind, as an expert on nuclear terrorism has put it "that can contemplate with equanimity a statement being simultaneously true and false" which one can hardly doubt "has its diplomatic uses".

K. Subrahmanyam writing after the Lok Sabha speech of Mrs. Gandhi mentioned above, commented: "that appropriate response cannot but be a comparatively more advanced or more sophisticated nuclear arsenal." In the foreword, written in April 1981, after the Lok Sabha speech of Mrs. Gandhi, Mr. Subrahmanyam refers to "the US State Department's statement

that the Symington Amendment prohibiting arms supplies to countries believed to be developing nuclear weapons would be repealed to enable Pakistan to get American arms supplies". The aim of the book is described to "analyse the Indian dilemma if the nuclear myths and realities are listed to enable a constructive debate on the issue in this country". In fact, the book is a lobbyist tract for India acquiring "a comparatively more advanced or more sophisticated nuclear arsenal".

**India's '74 Bang.** India's entry into the nuclear club was announced in 1974 with a big bang on Pakistan's border, made possible by American and other Western aid to India. Soon, Pakistan was perceived to respond by acquiring the nuclear capability and fears were expressed about the prospects of widespread nuclear proliferation. A provision of the International Security Assistance and Arms Export Control Act signed into law by President Ford in July 1976, linked the US military and economic aid to constraining the use of nuclear technology by recipient states. The provision was introduced by Senator Stuart Symington (Democrat-Mo) and prohibits the furnishing of economic or military assistance (with the exception of food grants) and military sales to countries that "deliver or receive nuclear reprocessing technology materials, equipment or technology unless they adhere to International Atomic Energy Agency or other international safeguards". This is qualified, however, by the provision that the President can waive the prohibition in specific cases, if he determines that vital security interests are involved and obtain assurances that nuclear weapons will not be fabricated from American-supplied nuclear material.

Dr. Richard Burt who among other positions has served as Assistant Director of the International Institute of Strategic

Studies in London, and at the time of writing was National Security Affairs correspondent for the *New York Times*, comments "...more by accident than design, the relationship between conventional arms transfers and the spread of nuclear weapons has become more controversial". Elaborating in the footnote he says:

"This was vividly demonstrated in the apparently contradictory discussions held by the United States Secretary of State with the Shah of Iran and Prime Minister of Pakistan during August, 1976, where in the case of Iran, interests of non-proliferation was said to be served by the continuance of American conventional sales, but in the case of Pakistan those same interests were said to necessitate the threat of an American arms embargo. The threat of withholding military equipment from Pakistan was used to dissuade the government from going ahead with the purchase of reactor and reprocessing technology from France. Secretary of State Henry Kissinger reportedly justified this action by referring to his obligations under the language of the Symington provision."

If Pakistan had tried to use India's nuclear explosion in 1974 to augment Pakistan's military strength declaring that the alternative to it was to go nuclear, Pakistan's ally and the main supplier of arms—the United States—responded by imposing sanctions on economic aid on the one hand and pressurizing France to cancel the deal for the transfer of nuclear technology to Pakistan. Pakistan's relations with the United States took a nose-dive and Pakistan was presented with what the *Newsweek* has recently called, a "military dilemma". Pakistan was "unable to assemble anything approaching a modern arsenal", and could "barely maintain its collection of antique armaments". But it attracted an unprecedented attention from

the West, particularly its media, in connection with its alleged attempts to make a nuclear bomb, later billed as the "Islamic Bomb". The US foreign policy elite saw in it an attempt to compensate conventional arms inadequacy through acquiring nuclear arsenal *albeit* a modest one of its own.

**"Islamic Bomb"** The scenario of "the Islamic Bomb" as presented in the West and in India is very intriguing indeed. P.K.S. Namboodiri of the Institute for Defence Studies and Analyses, New Delhi, writing on 'Pakistan's Nuclear Posture' in the book under review writes: "While the China connection affords a speculative area in the context of Pakistan's efforts, we are on firmer ground in respect of the Islamic factor". He quotes Francis Fukuyama from his book *The Security of Pakistan: A Trip Report*, Rand Corporation, Santa Monica, September, 1980: "Acquisition of nuclear weapons is very much bound up with Pakistan's selfconception as the leader of the Islamic World,....". Namboodiri comments: "Pakistan is destined to play this role because of its relatively developed technological and military infrastructure and an articulate foreign policy elite". The Arabs are long convinced of the need to "develop Arab nuclear capability to counter the Israeli nuclear arsenal.... Now,...the Arabs have the influence and resources to accomplish their aspiration". Referring approvingly to western sources, he sees it "logical that Arab sources will help finance and encourage Pakistan with a view to get back nuclear technology and services from Pakistan, which could be used against Israel". This Arab-Pakistani co-operation is looked at with approval by the Islamic World, Namboodiri continues: "Interestingly, this sentiment seems to have transcended the Arab horizons to engulf the whole Islamic movement". The Acting Prime Minister of Malaysia is quoted to



have declared: "The time had come for Muslims to manufacture their own weapons and have at their disposal such weapons as the atomic bomb if they hoped to win" (the war against Israel to "liberate Jerusalem and Palestine"). Dismissing the denial of both Pakistan and the Arab countries of the existence of a Pak-Arab "nexus" for "reaching a nuclear capability vis-a-vis Israel", our Indian expert says "the Arab aspirations...have become, more meaningful in the context of Pakistan's willingness to place its resources in the service of the Islamic cause". Quoting President Zia-ul-Haq as having declared "that he would personally go to Saudi Arabia and fight to save that country and the royalty, even at the expense of Pakistan's security", Namboodiri writes: the declaration "may go down as a unique record in history for extra-territorial loyalty at the highest level. It is an indication of the strength of relationship between Pakistan and Islamic countries..."

Discussing the implications of "Pak-Arab nuclear understanding" for Israel it is declared...closer and large scale military involvement of Pakistan in Saudi Arabia... would itself be a factor which would weigh heavily in calculations of Arab-Israeli balance, once Pakistan acquires a credible nuclear capability".

According to Namboodiri "General Zia was obviously hoping for a nuclear breakthrough by the end of 1980, what probably changed Pakistan's schedule may not necessarily be major technical problems, but the mass of political problems following the Soviet intervention in Afghanistan... The Pakistani policy makers seem to have immediately realised that they cannot go ahead with their nuclear programme safely while antagonizing both superpowers, who at that stage had a common concern in preventing Pakistan from going nuclear".

Now as Pakistan is seen "tipped to play an important role in the framework of western strategy in the area, it is not likely that Pakistan would do anything which would seriously upset the U.S. global policies and embarrass its leaders. There is evidence to suggest that Pakistan has already conveyed to the new US leadership that it would not indulge in any nuclear adventurism in the near future". However, "this can only be an interim posture to straighten out Pakistan's relations with the United States mainly to build up its conventional military capability. In the medium term, when Pakistan becomes really capable of embarking on a weapon programme, these constraints may not operate".

K. Subrahmanyam, the editor, in his contribution to the book opines:

**Indian Hardliner.** "With Pakistan being treated as a frontline state there are possibilities that US may develop a more relaxed view regarding Pakistani nuclear efforts. No doubt they will take necessary steps to ensure that Israel's security is not affected...they may acquiesce in Pakistan going nuclear and offset the threat to Israel by appropriate credible security guarantees against any likely Pakistani nuclear threat to Israel". K. Subrahmanyam believes: "The Nonproliferation Treaty and the nuclear mystique have made nuclear weapons the international currency of power." He wants India to act like a big nation: "We are large enough numerous enough and have enough resources to think for ourselves and to develop policies which will serve our interests...."

He wants India to go nuclear that is have nuclear weapons arsenal. A "non-nuclear India will be at a terrible disadvantage vis-a-vis a nuclear armed Pakistan". Apart from its military implications a "nuclear Pakistan

in an asymmetric situation will totally countervail India within the subcontinent. With a nuclear China and a nuclear Pakistan the demands of the smaller powers of the subcontinent on India will become increasingly difficult to meet. Secondly, the *millat* concept...will gain further strength. Thirdly, Pakistan will be able to exercise its leadership over most of the Islamic world and this can be made use of in many ways against the Indian interest. Fourthly, Pakistani Generals may consider seizing Kashmir in a swift blitzkrieg...In this connection in a situation of nuclear asymmetry the Bannihal tunnel would form an ideal target for a nuclear weapon. It will cause minimum collateral damage, seal off the Kashmir Valley from India and make the Valley totally vulnerable to a massive assault. Fifthly, such a technological achievement by Pakistan will place at its disposal the vast wealth of oil-producing nations...and it is too obvious to spell out the consequences of such a development for Pakistan's arms build-up."

We have already mentioned that in the preface of the book, Subrahmanyam quoting his Prime Minister's Lok Sabha statement on April 9, 1981, declares: "...implied in the statement, India may be compelled to respond in an appropriate way to the development of a Pakistani nuclear arsenal and that appropriate response cannot but be a *comparatively more advanced or more sophisticated nuclear arsenal* (emphasis added). He is inclined to believe that "a nuclear war in an Indo-Pakistani situation is highly probable—more probable than use of nuclear weapons in US-USSR and Sino-Soviet confrontations."

It is therefore not surprising when he says: "Those in the US Administration who advocate that the Symington Amendment be modified, in spite of receiving no credible pledges from Pakistan about its

refraining from efforts to develop nuclear weapons are in fact signalling to Pakistan that its nuclear weapon capability will not stand in the way of establishing a framework of security consensus from Pakistan to Turkey against the Soviet Union".

Not only that: "If the framework of Security consensus covering Pakistan is brought about and there is a future conflict between India and Pakistan, the country (i.e. India) will have to take into account the possibility of a US intervention in favour of Pakistan".

Apart from PKS Namboodiri's contribution "*Pakistan's Nuclear Posture*" and K. Subrahmanyam's "*India's Dilemma*", "*The Myth of Deterrence*", and "*Implications of Nuclear Asymmetry*"; there are six other contributions. M. Zuberi has written on "*Nuclear Safeguards: the Servitudes of Civilian Nuclear Technology*". T.T. Poulouse, like M. Zuberi, is with the Centre for Disarmament Studies, Jawaharlal Nehru University, New Delhi. He has contributed "*Nuclear Proliferation and Second NPT Review Conference*". C. Raja Mohan, also of the same Centre has written "*Atomic Teeth to Apartheid! South Africa and Nuclear Weapons*." P.S. Jayaramu's contribution is entitled "*Nuclear weapons free zone, Non-Proliferation Treaty and South Asia*." He is with the school of international studies, Jawaharlal Nehru University. Christopher S. Raj who is with K. Subrahmanyam's Institute for Defence Studies and Analyses, has contributed "*Israel and Nuclear Weapons: A Case of Clandestine Proliferation*." Also with this Institute is K.N. Ramchandram. He has written on "*China and Nuclear non-proliferation issues*".

It would be interesting to mention here the views of Roberta Wholesetter who has taken the Indian nuclear programme as an



example of the role the victim often plays in deceiving himself—the victim in her example being the United States of America. She believes that the American government refused to recognise India's military nuclear preparations. The Indian regimes (Nehru, Shastri, Mrs. Gandhi and Desai) "have been able to use as a cover for their military programme the peaceful atom and the desires of the Americans and the Canadians to propagate civilian nuclear electricity—and to sell reactors—and more recently to conclude a comprehensive test ban treaty."

Also the belief of some experts that September 1979 nuclear blast detected by an American Surveillance Satellite while passing over the Atlantic Ocean off the coast of South Africa, may have been

Indian, and not Israeli or South African, as commonly held. J. Robert Oppenheimer—the father of the atom bomb—is said to have stared out at the New Mexico flats and recalled a Hindu text, on the day of the "Trinity explosion" near Alamogordo Air Base (July 16, 1945):

If the radiance of a thousand suns  
Were to burst at once into the sky,  
That would be like the splendor  
Of the Mighty One,  
I am become Death  
The shatterer of worlds

Less than a month after this first explosion two of the new weapons were used at Hiroshima and Nagasaki, Japan, on August 6 and 9, 1945.

## INDIAN OPINION

# The F-16 Issue Frightening Our-Selves To Death

Ravi Rikhye

*On present-day plans alone the IAF will by 1985 have in service 4 Jaguar, 10 MIG-23/27 and 16 MIG-21 squadrons, without taking into account any specific additional response to the F-16. By 1987 India will have around 36 squadrons with high-performance aircraft, totalling over 750 planes. Compare this to Pakistan's likely total of under 200 high-performance aircraft, consisting of 100 Mirage 3/5s and 80 F-16s.*

*It should become immediately apparent that with more than a three-to-one superiority in high-performance aircraft, the IAF need not be overly concerned with the introduction of the F-16 into the PAF. The F-16, good as it is, cannot compensate for the shortage of numbers in the PAF.*

*We are in the danger of frightening ourselves to death over the supply of F-16s to Pakistan. Though the aircraft itself is a formidable fighter, the supply will not alter the existing air balance between India and Pakistan. This is because no matter how good a weapon it may be, it cannot compensate for the paucity of numbers and Pakistan can never acquire enough F-16s to offset the Indian Air Force's many strengths.*

The F-16 undeniably represents a new dimension in air warfare in South Asia. Presently, it seems likely that the standard version, the F-16A with the F-100 engine, will be supplied to Pakistan rather than the

oft-mentioned "Export Fighter" version with the less capable modified J-79 engine. The first has 25,000 pounds of maximum thrust, compared to 18,000 pounds for the second; equally important, at most speeds



the F-100 uses half the fuel of the J-79, so that for most conditions, the F-16A has twice the range of the "de-rated" version called the F-16/79.

The de-rated version, however, as yet exists only in prototype, whereas the standard version is already in service in six air forces. If, as reported in the press, Pakistan is to get "immediately" some F-16s, these will have to be the standard versions. Later, should the de-rated version become available, considerations of engine and systems standardisation will even then militate against its supply.

**Capabilities.** The plane is a multi-purpose fighter, performing with equal facility in both air superiority and strike missions. It was designed as a lower-cost complement to the F-15, the best air superiority fighter in existence. The F-16s strike capability was, for that reason, supposed to be secondary. Thanks to various advances in the electronics field and to some unexpected gains in air-frame and engine design, however, a strike capability has emerged that, in the view of some experts, makes the F-16 a better fighter-bomber.

From the Indian viewpoint, the F-16's capability can be stated as follows. It is as good as the Jaguar for deep-penetration and better than the MiG-21 or MiG-23 for air superiority roles. For example it is as agile as the legendary Gnat, while flying twice as fast, with four times the range and with six air-to-air missiles.

Saying all this may apparently make nonsense of my earlier statement that the F-16 will not alter the Indo-Pakistani air balance. Though at present the supply of one squadron with 15 or 16 aircraft has been agreed upon (always assuming that the usually cranky US Congress approves the sale)

over the long-term around four squadrons and 80 aircraft are likely to be involved. Taking into account delivery constraints, the first squadron could become operational by early 1982 if the aircraft at present earmarked for the US Air Force are given to Pakistan; the second squadron will become operational in 1985 from new-delivery aircraft; and the rest will come into service by 1987.

On present-day plans alone the IAF will by 1985 have in service 4 Jaguar, 10 MIG-23/27 and 16 MIG-21 squadrons, without taking into account any specific additional response to the F-16; by 1987 India will have around 36 squadrons with high performance aircraft, totalling over 750 planes. Compare this to Pakistan's likely total of under 200 high-performance aircraft, consisting of 100 Mirage 3/5s and 80 F-16s.

It should become immediately apparent that with more than a three-to-one superiority in high-performance aircraft, the IAF need not be overly concerned with the introduction of the F-16 into the PAF. The F-16, good as it is, cannot compensate for the shortage of numbers in the PAF.

**Indian Concern.** The concern being expressed in India about the F-16's bombing accuracy is quite valid. It is being said that Pakistan will now have the capability to attack Indian nuclear reactors and to interdict Indian communication lines all the way between Delhi and the Pakistan border. It would be unwise for India to ignore these implications. But three points need be made:

First, should Pakistan so choose, it can put the Indian nuclear reactors under a threat with its existing fleet of Mirages, especially those Mirages that have been re-equipped with new navigation attack

system. They would probably need more Mirages than F-16s to be sure of hitting each target, say a dozen Mirages as opposed to eight F-16s, but in practical terms this is not a significant disadvantage. The F-16 is going to be one of the first aircraft in the world capable of autonomous delivery of "smart-bombs". Right now aircraft function in pairs for this mission, one to "paint" the target with laser radiation to enable bombs from the other to home in with great accuracy.

Nonetheless, laser-designator systems are available for use on the Mirage; and the fact that two aircraft would have to be used instead of one F-16 is, again, not too significant if we are talking of important strategic targets such as nuclear reactors.

The real point is not a *technical* one. It is a *political* one in that Pakistan would be foolish to attack an Indian nuclear reactor, because that would give India a *carte blanche* to attack every economic target of significance in Pakistan. *And whereas India can blast every single important steel-plant, oil refinery and power-station in Pakistan, the latter can touch only those which are located in western India. Moreover we have many more deep-strike aircraft available for use in the period under discussion than does Pakistan. So Pakistan would doubtless be the loser in such an exchange.*

Second, Pakistan already has the capability to interdict our western lines of communication. The Mirage may not compare favourably with the F-16 in payload-over-range. But it is no slouch, either. It can carry two-tonnes over 300-miles compared to three-tonnes for the F-16. The Indian Army is fully aware of the threat to its communication lines and has already taken counter-measures like forward-dump-

ing of supplies and a shift of many major army units closer to the border as at Bhatinda and Gurdaspur.

Third, my personal suspicion is that we are unlikely to see many F-16s in the Indian skies: they are going to have their hands full, protecting Pakistan air space against marauding IAF Jaguars and MIG-23s, of which India has great many entering service. In India we usually choose to forget the effect of our own weapon purchases on Pakistan. Moreover, we also play down Pakistan's weaknesses. Today Pakistan has only about 25-30 high performance aircraft (the Mirage 3EP) available for defence against the Indian Jaguars when they go in at high-speed at very low levels. With India likely to have 300 Jaguars and MiG-23 by 1985, Pakistan has a very serious air defence problem emerging.

The F-16's radar can 'look-up' or 'look-down' at various ranges up to 60 miles and this will be a great help indeed. But, again, there is the problem of numbers: even with 40 F-16s by 1985 it is doubtful if more than a token number can be spared for offensive missions. By 1987 when the PAF will have 80 of them, then the IAF will have 500 aircraft capable of striking any worthwhile target in Pakistan.

**Limitations.** What makes me so sure that the US will deliver no more than 80 F-16s to Pakistan? Why not 150 or even 200? For one thing, Pakistan cannot pay for them even if it obtains very generous grants from the Arabs. For another, the US has always acted to limit Pakistan's offensive capability. For example, in the 1954-65 only 26 B-57 bombers were supplied to the PAF, whereas India had three times as many Canberras. Between 1976 and 1980, the US refused to supply Pakistan with any attack aircraft



despite India's steadily increasing air capability. Eighty F-16s represent, in fact, the upper end of potential US supply—right not only about 40 are likely to be included in the just-concluded arms deal. Given Pakistan's dire need to modernize its ground forces, it is hard to see how money can be spared for a larger F-16 order at present.

*Instead of coolly calculating the odds, what many commentators and spokesmen are doing is to make the F-16 look like a magic weapon that puts India at its mercy. This was done earlier with the F-86 Sabre fighter and the M-47 Patton tanks. These were no better than the Indian Hunter and Centurion respectively. But by building up a fear psychosis, Indians themselves did half of Pakistan's work for it before a single shot was fired. This psychosis inhibited the conduct of our relations with Pakistan in the period 1954-65, and even the conduct of our operations against Pakistan in 1971 when we had a huge superiority both in quality and quantity of weapons.*

We always object to being equated with Pakistan. Then by our actions we make it inevitable that others do it. Foreigners are saying: "Indians have Jaguars and Mig-23s outnumbering Pakistani F-16s by many times, yet they are frightened of the Pakistan Air Force." The Pakistanis have been say-

ing: "We're a tenth of India's size, but we can beat them any time."

It is hardly surprising that after reading the scare stories in their own press the men of Indian armed forces start doubting their own capabilities. *The fact of the matter is that even if India made no specific counter to the F-16s, it can defeat Pakistan in the air any day of the year.* Yes, we would lose more Jaguars and MiG-23s than we would had Pakistan no F-16s. But wars are not won or lost on the basis of superior capabilities of just one or even many weapons. Numbers, tactics, better weapons in other areas and plain luck all have their role to play.

All the same, India will respond to Pakistan's acquisition of the F-16. One analyst has said somewhat cynically: "The best thing for the IAF is the Pakistani F-16; Pakistan will get 40 F-16s and IAF will stampede the Government into buying 150 Mirage 2000s as a counter."

After the 1965 war we used to go around saying: "It's the man and not the weapon that counts." Even so, since 1966 the Government of India has been firmly committed to giving the best weapons possible to the military. So an equal to the F-16 will be given to the IAF. Can we now concentrate on being better men—at least, better informed men?

## DOCUMENTATION

# Joint U.S. - Pakistan Statement June 15, 1981

James L. Buckley, Under Secretary of State for Security Assistance, and a team of US officials from Washington, concluded their five-day visit to Pakistan today (June 15) and will fly back to the United States from Karachi early on the morning of June 16. During his visit, Mr. Buckley met for two days of talks, with senior Pakistan leaders and officials, including President Zia-ul-Haq, Foreign Minister Agha Shahi, Finance Minister Ghulam Ishaq Khan, the Secretaries General of the Foreign and Defence Ministries, S. Shah Nawaz and Major General (Retd) M. Rahim Khan, Foreign Secretary Riaz Piracha, Lieutenant General Ejaz Azim, Ambassador-designate to Washington, Lieutenant General K.M. Arif, Chief of Staff to the President, and others. Mr. Buckley also visited Murree and refugee camps in the North West Frontier Province and Baluchistan.

Mr. Buckley's visit, at the invitation of the Pakistan Government, was part of the continuing dialogue established between the Government of Pakistan and the Government of the United States during the last four months and aimed at finding

ways for the US to assist Pakistan in meeting the unprecedented threats it faces to its independence and sovereignty as a consequence of the developments in the region. The previous round in these talks had taken place in April when Foreign Minister Agha Shahi headed a team of senior Pakistani officials for talks with Secretaries Haig and Weinberger in Washington, D.C.

Mr. Buckley's official talks in Islamabad, which took place on June 13 and 14, centered on U.S. proposals to provide economic assistance and to facilitate sales of military equipment to Pakistan. Detailed discussion took place on various levels of assistance and the composition of assistance required by Pakistan.

The talks also provided an opportunity for discussions of urgent Pakistani military requirements which the United States had agreed to look into with a view toward determining which ones of them the United States might be able to satisfy through its Foreign Military Sales (FMS) Programme.

During the talks, the two sides discussed the serious threat to the region posed by the



presence of foreign troops in neighbouring Afghanistan. Both sides agreed that a strong and independent Pakistan is in the mutual interest of the United States and Pakistan, as well as of the entire world. Mr. Buckley affirmed American determination to assist Pakistan and to support Pakistan's sovereignty and territorial integrity.

The Pakistani side explained Pakistani policies, especially Pakistan's commitment to the principles and purposes of the Non-aligned Movement and the Organization of the Islamic Conference. Both sides agreed that US assistance as proposed is consistent with these principles and with Pakistan's non-aligned status. Mr. Buckley specifically disclaimed any American interest in military bases or in establishing any new alliances.

The United States and Pakistan discussed the dimensions of an overall framework for American efforts to assist Pakistan over the next six years. This includes a programme of cash military sales during this year. It also includes a five-year programme of economic support funds, development assistance, and loans for foreign military sales the total value of which is expected to be approximately three billion dollars—subject to annual approval by the United States Congress. The multi-year approach is in response to the seriousness and immediacy of the threat to Pakistan's security.

The United States has agreed to the sale of F-16 aircraft to Pakistan to assist Pakistan to improve its air defence capabilities; terms, timing, and numbers will be determined in a later meeting, likely to take place in Washington, between Pakistani and American military representatives.

The United States agreed also to the early delivery of selected defence equipment

urgently needed by the Pakistan defence forces to meet the threats Pakistan faces.

Mr. Buckley invited the Government of Pakistan to send a team of military and Defence officials to Washington to discuss military equipment needs and availabilities in detail. This visit is expected to take place before the end of June.

### **US-PAK DEFENCE EQUIPMENT TALKS: JOINT STATEMENT**

As a sequel to US-Pakistan diplomatic discussions held this year, a Pakistani military delegation, headed by Secretary-General, Defence, M. Rahim Khan, visited the Department of Defence—July 13-16, 1981. The purpose of these bilateral military talks was to review Pakistan's security situation as it has been altered by the presence of foreign military forces in Afghanistan and to examine in greater detail Pakistan's specific near-term and longer-term requests for purchasing US military equipment to strengthen its national defence.

During his stay, Secretary-General Khan met with Deputy Secretary of Defence Carlucci, Under Secretary of State Buckley and various other department of defence and department of state official. Additionally, Pakistani Ministry of Defence, Joint Staff, Army, Air Force and Navy representatives joined their US counterparts for working.

Group sessions to consider the defence requirements presented by Pakistan and the ability of the United States to help meet these equipment needs. In conjunction with the visit, a Pakistan Air Force team previously toured US Air bases to obtain familiarization with the F-16 aircraft the United States has agreed to sell to Pakistan.

Convinced that a strong, independent Pakistan is a necessary element in enhancing the stability of the vital Southwest Asia area, the United States presented for Pakistan's consideration cost estimates and delivery times for a wide range of major defence equipment of interest to Pakistan. US-Pakistan military supply discussions will be continued on the basis of the cordial, constructive and cooperative exchange of information accomplished during this visit.

**U. S.—PAKISTAN COOPERATION AGREEMENT SIGNED AT ANKARA ON MARCH 5, 1959 ENTERED INTO FORCE MARCH 5, 1959.**

**Agreement of Cooperation between the Government of the United States of America and the Government of Pakistan**

The Government of the United States of America and the Government of Pakistan:

Desiring to implement the Declaration in which they associated themselves at London on July 28, 1958;

Considering that under Article I of the Pact of Mutual Cooperation signed at Baghdad on February 24, 1955, the parties signatory thereto agreed to cooperate for *their* security and defense, and that, similarly, as stated in the above-mentioned Declaration, the Government of the United States of America, in the interest of world peace, agreed to cooperate with the Governments making that Declaration for *their* security and defense;

Recalling that, in the above-mentioned Declaration, the members of the Pact of Mutual Cooperation making that Declaration affirmed their determination to

maintain their collective security and to resist aggression, direct or indirect;

Considering further that the Government of the United States of America is associated with the work of the major committees of the Pact of Mutual Cooperation signed at Baghdad on February 24, 1955;

Desiring to strengthen peace in accordance with the principles of the Charter of the United Nations:

Affirming their right to cooperate for their security and defense in accordance with Article 51 of the Charter of the United Nations;

Considering that the Government of the United States of America regards as vital to its national interest and to world peace the preservation of the independence and integrity of Pakistan;

Recognizing the authorization to furnish appropriate assistance granted to the President of the United States of America by the Congress of the United States of America in the Mutual Security Act of 1954, as amended, and in the Joint Resolution to Promote Peace and Stability in the Middle East; and

Considering that similar agreements are being entered into by the Government of the United States of America and the Governments of Iran and Turkey, respectively.

Have agreed as follows:

**Article 1.** The Government of Pakistan is determined to resist aggression. In case of aggression against Pakistan, the Government of the United States of America, in



accordance with the Constitution of the United States of America, will take such appropriate action, including the use of armed forces, as may be mutually agreed upon and as is envisaged in the Joint Resolution to Promote Peace and Stability in the Middle East, in order to assist the Government of Pakistan at its request.

**Article II.** The Government of the United States of America, in accordance with the Mutual Security Act of 1954, as amended, and related laws of the United States of America, and with applicable agreements heretofore or hereafter entered into between the Government of the United States of America and the Government of Pakistan, reaffirms that it will continue to furnish the Government of Pakistan such military and economic assistance as may be mutually agreed upon between the Government of the United States of America and the Government of Pakistan, in order to assist the Government of Pakistan in the preservation of its national independence and integrity and in the effective promotion of its economic development.

**Article III.** The Government of Pakistan undertakes to utilize such military and economic assistance as may be provided by the Government of the United States of America in a manner consonant with the aims and purposes set forth by the Governments associated in the Declaration signed at London on July 28, 1958, and for the purpose of effectively promoting the economic development of Pakistan and of preserving its national independence and integrity.

**Article IV.** The Government of the United States of America and the Government of Pakistan will cooperate with the other Governments associated in the Declaration signed at London on July 28, 1958, in order to prepare and participate in such defensive arrangements as may be mutually agreed to be desirable, subject to the other applicable provisions of this agreement.

**Article V.** The provisions of the present agreement do not affect the cooperation between the two Governments as envisaged in other international agreements or arrangements.

**Article VI.** This agreement shall enter into force upon the date of its signature and shall continue in force until one year after the receipt by either Government of written notice of the intention of the other Government to terminate the agreement.

Done in duplicate at Ankara, this fifth day of March, 1959.

<i>For the Government of the United States of America:</i>	<i>For the Government of Pakistan:</i>
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FLETCHER WARREN	SAYID M. HASSAN.
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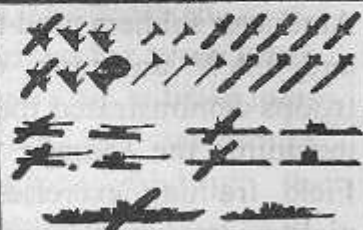
Fletcher Warren	Sayid M. Hassan
(SEAL)	(SEAL)

*Note :* Preceding text of agreement has been taken from "U.S. Treaties and Other International Agreement".



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*SPECIAL FEATURE:*

## U.S.—Egyptian Exercise Bright Star

US Army personnel who recently exercised in Egypt have concluded that the soldier's worst enemy in the desert may not be hostile forces, but rather whirling clouds of sand. Continuously blowing sand, they said, "sandblasted" turbine engine blades and helicopter rotors, clogged up 20mm cannon, machine-guns and rifle barrels, and led some to conclude that the Colt M-16 rifle, standard issue for US soldiers and Marines, "isn't worth a damn" in desert warfare unless all oil is removed. This precaution prevents sand from clinging but if employed on machine-guns rapidly caused them to overheat. Observers are shocked by the elementary nature of these so-called "revelations", which has been common knowledge in many armies since World War II.

Pentagon reporters were recently debriefed on the performance of US forces which took part in Exercise Bright Star. Those making presentations included the US Army task force commanders and senior army aviators on the exercise, *plus* lower-rank infantry officers and an enlisted platoon leader.

About 700 soldiers of the 101st Airborne Division (Air Assault) from Mt. Campbell, Kentucky, were deployed to Egypt in November as were about an equal number of support troops. The two-week exercise was designed to test US troops and equipment in a desert environment and largely took place about 30 miles from Cairo West airfield. It was the first time that a unit of the so-called Rapid Deployment Force had conducted an exercise in the Middle East.

US Army aircraft airlifted to Egypt included 15 Sikorsky UH-60A Black Hawks, 11 Bell OH-58C Kiowas and ten Bell AH-1S TOW-equipped attack helicopters. Army vehicles shipped to Cairo West airfield included jeeps, 2.5t trucks and other support vehicles. But no tanks, artillery or armoured personnel carriers were ferried to Egypt. The Egyptian Army lent "Opposing forces" in the form of 17 BTR-50 APCs. Air support was provided by eight US Air National Guard A-7 Corsair 11s. The Egyptian AF provided MiG-17s and Mirages for the exercise. The Egyptians also provided Mi-8 Commando and Gazelle helicopters.



Bright Star included a live firing exercise which started with US Army and Egyptian soldiers rappelling from helicopters. A-7s simulated air strikes and AH-1S gunships firing rocket led a mock air assault in which American soldiers fired their TOW Dragon and LAW anti-tank weapons. Egyptian troops demonstrated their weapons as well, including the Sagger anti-tank missile. Field training exercises, including some night operations also involved an air assault by two companies and 16 TOW vehicles.

**Scout And Attack Helicopter Experience.** US Army Major Tom Roy, who commanded scout and attack helicopter operations, said that the OH-58C operated effectively in the desert despite some shortcomings. The Kiowa experienced no power or pedal control problems and left very little signature, but Roy noted that it lacks the kind of optics which would allow a co-pilot to see at great ranges. "We need some type of stabilized binocular in order to perform the primary role as observer", he said. Roy also said that range determination in the desert is very difficult and that the OH-58C needs some type of laser range-finder which will allow the pilot to pinpoint targets accurately for TOW missiles. The AN/APR-39 radar warning device, he said, worked extremely well. "We were able to determine whether we were being tracked by SA-2 sites operated by Egyptians which were in the area."

Helicopter pilots had to abandon more traditional night landing techniques and replace them with a "night-hawk" technique using no lights. Pilots in Egypt would fly at low airspeeds during transition from the enroute altitude down to the last 10-15 feet, at the same time looking for terrain definition. Use of landing lights in the desert creates a "whiteout" effect, said Roy, and use of anti-collision lights induced pilot vertigo. He added that the radar alti-

## FIRST INDIAN N-REACTOR VESSEL READY

Calandria, the first fully indigenously-designed nuclear reactor vessel, has been handed over to the R-5 (research) project at the Bhabha Atomic Research Centre (BARC), Trombay, according to the official bulletin of the Department of Atomic Energy. The Calandria is the heart of the nuclear reactor. It was designed for the R-5 reactor at BARC by its reactor engineering division and fabricated by the centre's in-house manufacturing facility—the central workshops. All other reactor vessels fabricated for powder reactors in India so far have been based on a foreign design.

The R-5 reactor which is a 100MW thermal research reactor, is in the advanced stage of construction at Trombay. The Calandria is fabricated from extra-low carbon stainless steel plates ranging in thickness from 19mm to 65mm. It consists of a triangular inlet plenum with 144 fuel gups and a top plenum with a corresponding number of lattice positions. The main shell is approximately 3,750mm in diameter. The height of the Calandria is 6,700mm.

In addition to taking up design and fabrication jobs of a special kind on its own, the central workshops also assist industries entrusted with nuclear component fabrication jobs by the Department of Atomic Energy with skills and know-how built up by it, thereby adding to the technical competence, available in the country.

meter and low-altitude warning devices on the AH-1S worked well in Egypt. A comparable system is required for the OH-58C.

On maintenance of the helicopters, Roy said that plugs on some TOW missile systems accumulated sand which had to be brushed off. The 20mm cannon on the AH-1S, however, accumulated "a lot of sand" and the barrels had to be rotated constantly. Maintenance personnel used portable air compressors to blow sand away while the aircraft were re-armed. As far as the particle separator on the OH-58C's Allison T63-A-700 turbine engine is concerned, said Roy, "we know it doesn't work." As evidence, he showed turbine blades from an engine which experienced a compressor stall after ingesting sand.

While the rubberized compound to reduce wear on the leading edge of the AH-1S's main rotor worked well, some wear patterns showed up on the bottom side of the blade. Also showing wear were the trim-tabs and tip caps. Neither problem was considered significant, however. The OH-58C's tail rotor showed wear which started at the tip and ran to the root of the blade. "To combat this," Roy said, "you have to move more or carry additional tail rotor blades."

Roy said that, although the desert at first appears flat, his men were able to find gullies to fly through and wadis to hide in. Another aviator said: "We can fly and navigate in the desert and stay hidden. That was the biggest revelation I had."

**Black Hawk Operations.** Maj. William A. Glennon, commander of the Black Hawk pilots, said that the UH-60As performed "superbly" despite the large number of landings which contributed to rotor blade erosion. Glennon said that the Black Hawk suffered more than average type blow-

cuts. This, he said, was because pilots used roll-on landings in the desert to cut down on rotor blade wear, the tyres tending to hit jagged rocks hidden beneath the sand. A fix for the problem, he suggested, would be self-sealing or solid rubber tyres. Black Hawk APUs also failed to a little more often than usual. He said this was because the main rotor blades blew sand into the APUs, which have no particle separators. In contrast, he said, the particle separators on the General Electric 1700 engines worked well, successfully screening out most of the desert sand.

According to Glennon, pilots changed some pick-up and landing zone techniques while flying in the Egyptian desert. He said it is hard to land in "trail" formation (line-astern) in the desert because of blowing sand, so his men substituted line-abreast landings into the wind. Glennon also said that:

Current aircraft radios are generally line-of sight and, "in order to operate at great distances over the desert and communicate, you need something that follows the curvature of the earth, like a high-frequency radio."

Navastar/GPS navigation would be an improvement over the present Doppler navigation system.

The Black Hawk needs a night-vision system so that pilots can see through dust clouds and can make night-slingload pickups.

The UH-60A needs an aural radar altimeter warning device to indicate to the pilot when he is within one or two feet of the ground.

Black Hawk maintenance crews need portable shelters to allow them some protection from the blowing sand.



In his briefing, Capt. Carl S. Carrano, whose company played the opposition force, said that "the blowing sand got into everything" and his men were issued with goggles and scarves. "What's worse," he said, "the Colt M-16 had to be cleaned three times a day." According to Carrano, the infantryman needs a weapon which is easier to maintain and with fewer moving parts. He said that troops destined to fight in the desert need a weapon with a range of about 1,000m more than twice that of the M-16. Another weapon which experienced trouble was the M-60 machine-gun. When oil was removed, said Sgt. Kari D. Keeler, the gun would jam from overheating. When it was oiled, it became clogged with sand.

Carrano also recommended that the Army design a new sand coloured camouflage uniform for desert fighting. Hardly surprisingly, the standard green camouflage fatigues worn by the 101st Airborne Division troops were seen a long way off.

Carrano said six motorcycles were used for both reconnaissance and anti-armour missions. He said they worked well and their use added a "new dimension to air assault." He said that the riders could get within 50m of the opposing force before being heard. Equipped with a Dragon anti-tank missile, the driver became a highly mobile tank-killer, he said, adding that the exercise "drove home the point" that the desert is a high armour threat environment and, as a result, troops need to build their defence around anti-armour weapons. He said such weapons should be placed in depth, well forward of the main battle position.

Lt. Col. Dave Kuhl, who commanded the task force, said the deployment proved that "the division can go to the desert, can fight, and can win." Others would disagree, however, looking back on the problems encountered and the huge logistic support sent to Cairo West airfield with the combat troops.

## Boeing Wins NASA Supersonic Combat Aircraft Study Contract

A \$200,000 study contract to apply civil US supersonic transport (SST) technology to supersonic military fighter aircraft has been awarded to Boeing Military Airplane Company (BMAC) by the National Aeronautics and Space Administration, Langley Research Centre, Hampton, Va.

Four firms were entered in the competition, Grumman Aerospace Corporation, Bethpage, N.Y.; McDonnell Douglas Corporation, St. Louis, Mo. (which won a similar study contract); Rockwell International Corporation, Los Angeles, Calif.; and BMAC. The 12-month effort, according to Programme Manager Mark Sussman of BMAC's Advanced Airplane Branch in

Seattle, will involve reviewing and conceptually applying supersonic cruise research (SCR) data obtained by Boeing Commercial Airplane Company during the past several years under NASA direction.

"One of our tasks is to identify critical technologies applicable to military fighter airplanes that would require further NASA and Department of Defense development including flight test evaluation," Sussman said. The aircraft in question would be operational in the early 1990 time period.

Both of the winning firms will develop concepts for a theoretical European theatre tactical aircraft with a 500-mile radius of action and a Middle East theatre fighter

with a 1,500-mile radius. The radius of action is the distance from a military combat aircraft takeoff and landing point to its target or combat area.

"For the shorter-range plane, we proposed as a point of departure a design with a variable incidence canard and delta wing we have worked on with the Air Force for the past two or three years," Sussman commented. It will have underwing, pod-mounted engines with vectorable nozzles.

Vectorable nozzles, he explained, can be moved to change the direction of thrust, improving short-field performance. The canard, located near the nose, will replace the conventional horizontal stabilizer at the tail of the airplane and will be used in conjunction with the delta wing.

The point of departure proposed for the larger, longer-range combat airplane is based on a military application of an SST-type configuration. Sussman said: "It would have pod-mounted engines under the wing but is designed with an arrow, instead of delta wing," he added.

New technology to be examined for the tactical aircraft, Sussman said includes:

- \* Low-aspect-ratio wings blended into the airplane fuselage, with variable-camber control surfaces and vortex lift. Vortex lift involves controlling the flow of air over the wings with special leading edge devices, to enhance high angle of attack performance.
- \* Variable-cycle engines, efficient under a range of operating conditions, and non-afterburning turbojets.
- \* Weight-saving non-metallic composites and specially formed and bonded titanium structures.
- \* Active controls (automatically responding to changing loads) and digital avionics, for improved control response and reduced drag.
- \* Weapon carriage compatible with supersonic cruise and delivery.

## BOEING DELIVERS 4,000TH JETLINER

Last month the 4,000th Boeing jetliner—a 727-200—was delivered to Ansett Airlines of Australia. Almost 23 years ago, on August 15, 1958, Boeing's first production jetliner—a 707—was delivered to Pan American to kick off America's entry into the jet age.

This combined jetliner fleet now has carried some 3.5 billion passengers, has more than 100 million hours in the air and has flown more than 45 billion miles.

Deliveries have been made of four major airplane types—the 707, 727, 737 and 747.

The 707 was produced in nine major models but now is being built only for the U.S. Air Force and Nato as the Awacs Airborne warning and control system. Some 940 of the 707s have been delivered.

Delivery of the 727 began in October 1963. The largest selling airliner in history. 1808 ordered, 1,761 of the popular trijets have now been delivered.

The smallest member of the Boeing fleet is the 737 twinjet, which entered airline service with its first delivery to Lufthansa of Germany, in December 1967. The 737 was the world's best selling jetliner last year, 778 have been delivered. It has been built in four different models.

The queen of the jetliner fleets is still the double-deck 747, the first of which was delivered in December 1969 and went into service one month later. Built in seven different models, 521 have been delivered.

An average of 173 jetliners per year has been produced since the first delivery in 1958. Current combined production of the 707, 727, 737 and 747 now is 18 per month. The newest member of the Boeing jetliner "family"—the 767—rolled from the Everett factory on August 4, 1981, to mark the beginning of the latest chapter in the jet age.



## NEW 'BLACK BOX' JAGUAR FLIES

Flight trials of a Jaguar strike aircraft fitted with the latest Ferranti 'black box' Inertial Navigation System began on July 31st with the first flight from British Aerospace's Warton Division airfield at Warton, Lancashire.

The new system, the Ferranti FIN 1064, is housed in just one 'black box' replacing five previously used and has been ordered by the Royal Air Force for retro-fitting into their Jaguar fleet during 1983.

The FIN 1064 represents further advances in British electronic/microchip technology. It will enhance Jaguar performance in the key strike roles in the UK and Germany during the 1980s and beyond.

The new system increases computer capacity by some 56K, is 50 kilos lighter than the older system it will replace, and provides a space saving of some two-thirds which can now be used for other sophisticated equipment.

After the flight which lasted 1 hour and 15 minutes, Senior Experimental Test Pilot Chris Yeo said: "The system responded far better than forecast indicating great latent potential. I have never flown an aircraft with such an accurate navigation system. It will be a great bonus to RAF

pilots and will ease their workload considerably."

The new system consists of an inertial platform, computer, and power supply in a single 'black box' which is linked up with the existing radio altimeter, air data computer, head-up display, projected map display, laser ranger and marked target seeker and all other flight instrumentation.

A comprehensive built-in test equipment (BITE) enables the FIN 1064 to run a constant self-check programme during operation and, should any failure occur, indicates in the cockpit the area within the system which is defective. Further diagnosis can be carried out by inserting a ground test software programme which runs indepth checks on the serviceability of the system and associated equipment.

For the pilot's convenience, the main control panel covering route data and navigation/weapon-aiming mode selection is mounted on the port cockpit coaming and can be viewed 'head-up' as the flight progresses. The excess computer capacity allows the inclusion of new weapon ballistic data and additional navigational and operating aids, thus widening the large range of stores Jaguar can carry.

Jaguars are in service with the Royal Air Force, the French Air Force, the Indian Air Force, the Sultan of Oman's Air Force and the Ecuadorian Air Force.