

CEP as precise as 300 m or as imprecise as 4,000 m. It is much the same varied story with payloads, which range from approximately 100 kg to more than 2,000 kg.

THE ATTRACTION OF BALLISTIC MISSILES

For powers seeking to enhance their military capabilities, ballistic missiles are attractive for three main reasons: they can travel great distances at high speed; they can be equipped with warheads of great lethality; and, they can be guided.

Because of their speed and range, ballistic missiles provide the capability to penetrate enemy defences with little warning. Equipped with warheads of mass destruction, they can enable their possessor to deliver an initial disarming blow. Guidance and control systems direct the most sophisticated ballistic missiles to their target with considerable precision. Thus, as William Webster, Director of the Central Intelligence Agency said before the US Congress, "Ballistic missiles convey important new political and military status to those who acquire them."³

THE ACQUISITION OF BALLISTIC MISSILES

The question of exactly which Third World states are involved in missile acquisition has yet to be answered with certainty. Some reports suggest that at least 25 states are in the running, of which no less than 17 may already have systems deployed. According to US estimates, 15 states will have the capability to produce their own missiles before the end of the decade.

There are several means by which a state can acquire ballistic missiles. One is simply to purchase complete systems. Another is to modify existing systems, or to design and/or build complete systems or key component technologies. Some states have converted space programmes designed originally for peaceful uses to the development of military missiles. Sometimes, one or more of these methods are combined.

The purchase of large artillery rockets or small ballistic missiles is not difficult. The transfer of such systems, especially on the part of the superpowers, has been routine for the last thirty years. And now, following the lead of their suppliers, many recipient states have shown their willingness to re-transfer imported missiles.

Modification or replication of transferred systems is another way for states to enlarge, or upgrade to their own specifications, their missile arsenal. Many countries are following this route. For example, it is believed that South Korea has converted the US surface-to-air Nike Hercules missile into a surface-to-surface system, and is now producing it domestically. Iraq is believed to be constructing its own extended-range version of the Soviet Scud-B using parts of other Scud missiles.

A nation dedicated to having a ballistic missile programme can try to design and build its own system. This route, however, faces many hurdles. For example, a state would require a very high level of know-how in the design, manufacture and production of propulsion, and guidance and control systems. Despite this, some countries have already begun work on indigenous systems, often by copying others' systems, by using others' subsystems, or through a number of cooperative means with other states, including receiving technical or financial assistance.

A space programme can be used for the production of military missiles. Space programmes often begin with the development of sounding rockets, and are usually followed by space launch vehicles (SLVs). While sounding rockets are usually fired straight into the atmosphere with very unsophisticated guidance systems, SLVs are much more complex and bear many resemblances (in the propulsion and guidance systems, for instance) to ballistic missiles. In the past, many countries have benefitted from international cooperation for the development of experimental sounding rockets, gaining expertise which can be put towards the development of a missile programme.

THE MISSILE RACE

A complete, worldwide, nation-by-nation survey of ballistic missile programmes is beyond the scope of this paper. This is particularly so since information about ballistic missiles is still very spotty and often contradictory. In fact, as one observer has pointed out, "Rarely if ever since the late 1950s has the international community faced a major arms control and security issue with so little reliable information."⁴ Bearing this in mind, the following description of some developments in a selected number of states is only intended to provide an overview of the problem missile proliferation poses today, and in the near future. This information, unless otherwise stated, is drawn from one or more of the following sources: the 1989 and 1990 editions of the *SIPRI Yearbook*; a 1989 *CRS Report for Congress* by the US Congressional Research Service; and, an article which appeared in *Survival*, the journal of the International Institute for Strategic Studies.⁵

MIDDLE EAST

Of all the regions where ballistic missiles are being introduced today, the Middle East is by far the most worrisome. Seven states are actively pursuing the acquisition of various systems. In fact, the introduction of missiles to the region is becoming so widespread that no capital from Northern Africa to the Persian Gulf, to the Fertile Crescent, is beyond the reach of missile attack by a rival state.