

IRAF AIR DEFENCE COMMAND

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[Orbat.com note, 18.030.03: In view of the massive concentration of ADC assets in and around Baghdad in anticipation of the Coalition invasion we felt this review would be of interest to readers]

The duty of the IrAF/ADC is the foremost the defence of the regime, but also objects of strategic importance, and then only the defence of the Iraqi air space. For this purpose the IrAF/ADC includes all the manned interceptors and SAMs, integrated into one C4I/BM system, called KARI (Iraq spelled backwards in French), established in 1986-1987.

The control center of KARI is the National Air Defense Operations Center (ADOC), in Baghdad. The KARI is a mix of French and Soviet technology. Although there were many questions about its capabilities and integration, it remained fully functional for all the times since reaching the initial operational capability.

KARI is a highly centralized system, which controls practically whole Iraqi air defences via four local air defense sectors, each of which is directly subordinate to the ADOC, to provide local air defense control. These local air defense sectors (ADS) are concentrated to cover the most important areas of Iraq, around Mawsil and Kirkuk, Baghdad, ar-Rutbah, and Basrah, as well as some strategic targets outside these zones. There are four ADS:

- Northern ADS, with HQs at Mawsil and Qayyarah
- Central ADS, with HQs at al-Taqaddum, Salman Pak, Ubaydah Bin-al-Jarrah, an-Nejef
- Western ADS, with HQs at ar-Rutbah and H-3
- Southern ADS, with HQs at an-Nukhayb, al-Amarah, as-Salman, and az-Zubayr

Each ADS has its own main and reserve Sector Operations Center (SOC), at least four main early warning radar sites (each with a secondary site), as well as several brigades equipped with combat aircraft, or SAMs. Each ADS is further partitioned to four local operation sectors (LOS), each with own command center, own early warning radar station, and a net of ground-based observer and early warning reporting posts. The LOS' are optimized to direct interceptors or SAMs against incoming enemy aircraft. Simultaneously, they are feeding the data from their radars (most of which are currently of Iraqi license production, developed from French types, although there are also many Soviet models) and observers to the superior SOC. This then transmits the data to the ADOC via a net of highly-sophisticated and recently upgraded (by the Chinese) fiber-optical cables, TFH-647 radio relay systems, and a TFH tropospheric communications system. Once the data arrives

Command and Control Capabilities, and Effectiveness

The IrAF/ADC has a total of 500 radars, located at approximately 100 sites, all of which are integrated in KARI. Despite this, its operating capabilities remain very limited, can easily be saturated or jammed, or even completely broken down. The point is, that for the reasons of the securing the existence of the regime, the KARI is highly centralized. A hit at the ADOC will cause a severe disruption in the chain of command of all the ADS'. Equally, each ADS can be attacked separately, with not much hope for help from another ADS. Despite this, it must be again mentioned, that the KARI showed a surprising survivability despite heavy pounding, and that secondary HQs proved capable of swiftly taking over the tasks of the main HQ. This capability was further increased late last and early this year, with the help of the Chinese.

The nature of Iraqi SAM-operations now is that of a very high maneuverability and combination with other assets. Not seldom, Iraqis will re-deploy all the SAM-sites within the same ADS within the night, re-spotting them in order to achieve a surprise when US/allied aircraft appear on the next morning. Very often, the Iraqis will left whole parts of their ADS shut down for weeks, only to suddenly activate them when they deem this useful. Iraqi capability of deception and evasion should also not be ignored, as these factors enabled the IrAF/ADC to survive this year at all. The use of decoys is extensive, just like the use of GPS-

and IR-jammers, and over 65% of US/allied PGM dropped on IrAF/ADC sites this year either missed completely or hit decoys.

The reason for this is, that Iraqis are now almost continuously targeted by different „smart“ ammunitions since years, and that - with the help of Serb and Chinese technicians - they started to develop effective countermeasures. In the case of the AGM-88 the situation became critical already last year, developing so far, that both the USAF and the USN stopped using the weapon, which proved not to be effective any more, but only supplying the Iraqis with more US-technology and know-how.

The same obviously happened with GPS-guided weapons, early this year. It is interesting to note, that Pentagon still officially explains, that the GPS-weapons used by the USAF and the USN „can not be jammed“, and that „no one knows how effective GPS-jammers really are“, which is obviously wrong. The USAF and the USN like GPS guidance systems because they are relatively cheap and more accurate than the alternatives. GPS will also operate as well at night or in bad weather. Yet, their massive use also taught the Iraqis to create countermeasures, and resulted in the partial failure of the bombing operations in February this year. The GPS signal is very weak and jammers are not difficult or expensive to build. Russia openly sells GPS jammers to anyone with the cash, so also to Iraqis. While radars are expensive, GPS jammers are so cheap that an enemy can have many of them.

Saddam Hussayn is known to meet with the IrAF/ADC Commander, Gen. Shaheen Yasseen Mohammed, and a group of „creative researches“ (actually engineers and technicians of the IrAF/ADC and the Iraqi Universities) more frequently than with the Commander of the whole IrAF, Gen. Hamid Raja Shlah! It is obvious, that immense efforts are invested in increasing the capabilities of the Iraqi air defences, and that large number of GPS-jammers are now available to them. The Iraqis use to turn on additional GPS jammers as soon as some are hit with HARMs. It is actually possible to build "jam resistant" GPS devices for bombs, but these are expensive, of unknown reliability and not yet in general use, and it seems the Americans are very slow in their deployment, even if some AGM-88 HARMs were meanwhile modified to home in on GPS jammers.

The USAF and the USN were finally forced to try to shorten the terminal phase of the flight of their GPS-guided bombs, in order to shorten their exposure to Iraqi defences, which perhaps even proved capable of shooting down a „stealth“ glide bomb, like the JSOW. This, however, cause additional problems, as the re-programming of the weapon was not as simple as advertising, and many bombs missed by 100-200 meters.

Early Warning

Despite claims to contrary, and despite heavy pounding it experienced in the last eleven years, the Iraqi early warning net proved capable of precisely tracking targets like B-52 bombers far beyond Iraqi borders (up to 500km), and giving a timely warning to the ADOC. Without a complete destruction of Iraqi radar and spare parts production capabilities, and without a complete destruction of at least all the long-range surveillance radars, there is not much hope that this capability will be really neutralized, even if it can be considerably suppressed.

Reports from the IrAF, and the IrAF/ADC show, that it is perfectly capable of controlling every-day US/allied operations over southern and northern Iraq.

Heavy SAMs

IrAF/ADC operates a total or equivalent of 20 air defence brigades, with a total of 160 SA-2 launchers, 125 SA-3 launchers, 102 SA-6 launchers, 27 SA-8 launchers, as well as 30 Roland VI (truck-mounted) and five Crotale launchers. Furthermore, the IrAF/ADC is still in possession of over 3.000 of heavy SAMs.

The condition of most heavy SAMs is still relatively good, and they were intensively used through the whole year 2001 (over 900 firings recorded). The training of their crews was apparently also improved, and

- even if most of the available SAMs were not really modernized, but rather refurbished since 2000- the Iraqis came on a verge of success against US/allied aircraft several times this year. All US/allied pilots flying over Iraq confirm, that their operations there are not without considerable dangers, even if it all looks very much as a routine to the outsider; very often, only excellent ECM and high experience in evasion maneuvering save US/allied fliers from a catastrophe.

The problem for Iraqis is, that their opponents know their SAM-systems very well; in part even better than Iraqis, and that countermeasures against these are widely available. Thus, even if the SA-2s were now - just like most of the other types in use by the IrAF - upgraded with optical-guidance capabilities, their efficiency remains low. For this reason, in 2000 Iraq has also put under a contract a number of Belarus Military officers for training of its air defence personnel. In September 2000, ten Iraqi officers were even sent to the Military Academy of the Republic of Belarus for training in air defence tactics. Another group of Iraqis arrived in Belarus in October 2001, and is to stay there until September 2003. Their curriculum is to include also training on S-300/SA-20 SAMs, which are very likely to be delivered to Iraq, or perhaps already were.

Flak

Iraqi capabilities to fill the air with very dense anti-aircraft fire from guns of all calibers are well known. The most dangerous weapons at hand are ZSU-23-4 radar guided self-propelled guns, and ZSU-23s, both of which have a high density of fire, and against which the ECM has not proved to be exceptionally successful. Most of the Iraqi anti-aircraft artillery is - however - not radar guided, and reaches only to 15.000ft. Heavier guns, up to a caliber of 85mm, are available to the IrAF/ADC, but foremost used by IrA units.