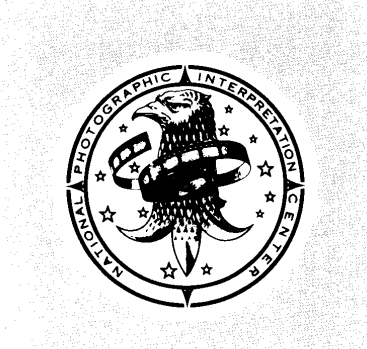


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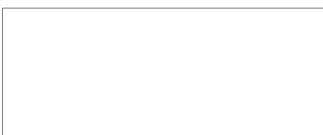


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**SOVIET TACTICAL AIR SIGNAL UNITS  
(S)**

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## SOVIET TACTICAL AIR SIGNAL UNITS (S)

### ABSTRACT

1. (S/WNINTEL) This report presents an imagery-derived analysis of the organizational structure of Soviet tactical air army (TAA) signal units. COMINT and other collateral data have been used to acquire Soviet TAA unit designators and to substantiate pertinent information obtained from photography.

2. (S/WNINTEL) This report contains descriptions of the two basic types of TAA signal units, a chart comparing TAA signal units with early warning (EW) units, and two conceptual depictions of deployed TAA signal units. The report includes 108 annotated photographs, two maps, four charts, and two line drawings.

### INTRODUCTION

3. (TSR) The Soviet Air Force (SAF) allocates air signal units to its TAAs. These air signal units were designed to enhance the command communications necessary to effectively integrate tactical air operations with ground forces operations. Monitoring of air signal units could provide indications of impending command post exercises (CPX), joint forces field training exercises (FTX), or other activities.

4. (TSR) During wartime, the Soviets assign a TAA to a Front organization.<sup>1</sup> One of the main missions of Soviet Frontal Aviation (Tactical Aviation) is to provide close air support (CAS)<sup>2</sup> to ground forces operations. Practice in CAS tactics is usually conducted in the context of joint forces operations within large training/maneuver areas. In peacetime, as well as wartime, Soviet TAA signal units must respond to several fundamental requirements essential to the success of joint forces operations. These include:

- a. Providing navigational support to combat aircraft entering or leaving the zone of operation;
- b. Providing coordination of air operations with ground forces operations;
- c. Providing the mobility needed to move with the Front—100 kilometers (km)/day, according to Soviet military doctrine—against the enemy;<sup>3</sup> and
- d. Providing reliable, multichannel, secure communications links.

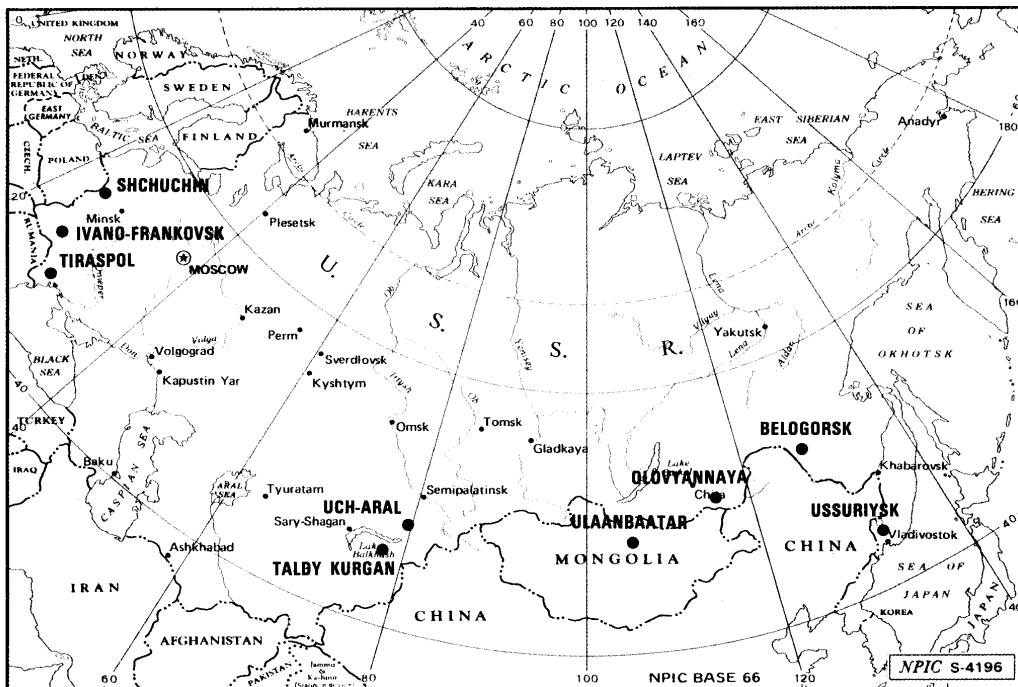


FIGURE 1. LOCATIONS OF SOVIET TACTICAL AIR SIGNAL BATTALIONS

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5. (TSR [redacted]) Analysis of the organizational structure of TAA signal units reveals that they are equipped to fulfill the above requirements.

6. (TSR [redacted]) Satellite photography shows that two echelons of air signal units exist in the TAA organizational structure: a tactical air signal battalion, subordinate to a TAA division, and a tactical air signal regiment, subordinate to a TAA. Soviets refer to the tactical air signal battalion as OBS RTO (independent signal and radio technical support battalion) and to the tactical air signal regiment as OPSAU (independent signal regiment serving the air army).<sup>4</sup> The TAA is administratively controlled (logistics, personnel, training, etc.) by SAF Headquarters, Moscow, but operationally controlled by the military district (MD)/Front commander. Air signal units, on the contrary, are administratively and operationally controlled by the units to which they are subordinate.

**BASIC DESCRIPTION**

**Tactical Air Signal Battalion**

**Mission and General Description**

7. (TSR [redacted]) Tactical air signal battalions have been identified at eight locations in the Soviet Union and at one location in Mongolia (Figure 1). The three-fold mission of an air signal battalion is to assist in establishing the command and control network of the TAA division command post (CP), to provide various radar and vectoring functions for air forces, and to provide auxiliary and forward dispersal airfield support to an aviation unit during emergency or planned operations.

8. (TSR [redacted]) Six of the nine battalions (Shchuchin, Ivano-Frankovsk, Tiraspol, Taldy Kurgan, Olovyannaya, and Ulaanbaatar) are at or near an operational airbase in the vicinity of a TAA division headquarters.<sup>5</sup> These six battalions, with the exception of Taldy Kurgan, also have in common a standard section obstacle course.<sup>6</sup> This type of obstacle course has been seen at almost all operational Soviet military airfields. No TAA division headquarters is known to exist in the vicinity of the Uch-Aral, Ussuriysk, and Belogorsk air signal battalions. These three installations do not include a standard section obstacle course. Each of these battalions is near a ground force army barracks and a helicopter airfield. It is suspected that these battalions may be connected in some way with a ground army liaison function.<sup>6</sup> Tactical air signal battalions have not been identified in those MDs which are not known to have a TAA organization. These include the Moscow, North Caucasus, Ural, Volga, and Siberian MDs. The following is a list of the tactical air signal battalions:

Installation Name	Geographic Coordinates	BE No	MD	USATC Series 200 Sheet No
Belogorsk Airfield	50-53-38N 128-28-22E		Far East	203-8
Ivano-Frankovsk Afd	48-53-17N 024-41-30E		Carpathian	232-20
Olovyannaya Afd	51-01-05N 115-25-42E		Transbaikal	202-6
Shchuchin Afd	53-36-02N 024-46-06E		Belorussian	168-18
Taldy Kurgan Army Bks AL 2	45-00-00N 078-20-30E		Central Asian	244-18
Tiraspol Army Bks	46-50-40N 029-36-45E		Odessa	250-7
Uch-Aral Army Bks AL 3	46-10-50N 080-56-40E		Central Asia	244-14
Ulaanbaatar Army Bks AL 1	47-55-30N 106-59-30E		Mongolian	286-5
Ussuriysk Army Bks West AL 3	43-47-30N 131-56-16E		Far East	291-1

**Tactical Air Signal Garrison**

9. (TSR [redacted]) A typical air signal battalion garrison consists of a headquarters/ administration building, eight single-story barracks, one messhall, 12 support buildings, and two vehicle storage buildings. The bulk of battalion equipment is in open storage (Figure 2). An air signal battalion is estimated to have about the same number of personnel as an EW battalion—approximately 300 enlisted personnel and officers.<sup>1</sup> When tactical air signal battalions are located at airfields, the personnel probably share the garrison with personnel supporting the airfield. Personnel of the three battalions possibly connected with a ground army aviation area are housed in the nearby army garrison or lodged in their own separate casern.

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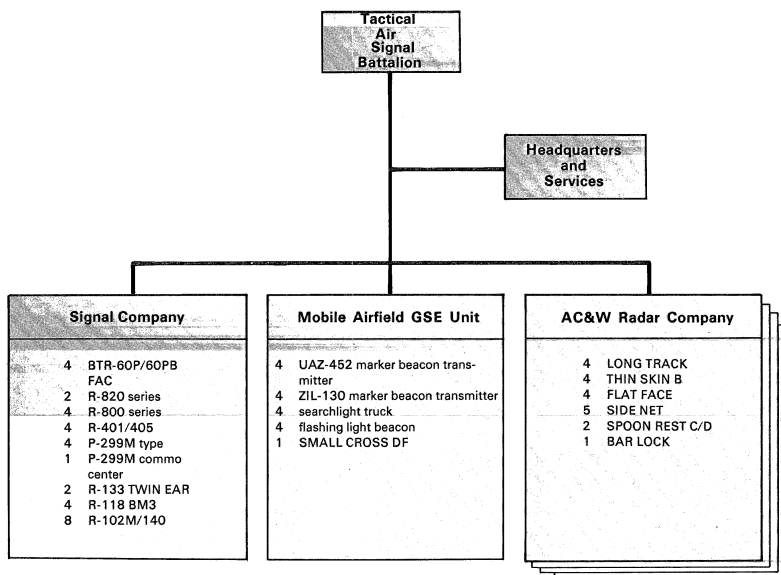
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**Equipment and Unit Structure**

10. (TSR) Three types of equipment are common to air signal battalions: signal, mobile airfield GSE, and aircraft control and warning (AC&W) radars. Although this equipment is generally parked at random, for the purpose of this report a tactical air signal battalion has been categorized into a signal company, a mobile airfield GSE unit, and three or four AC&W radar companies (Chart 1, Figures 3-5). Examples of equipment associated with tactical air signal battalions are illustrated in the final section of this report. Figure 6 is a conceptual drawing of a dispersal airfield incorporating the three major components of an air signal battalion. Figures 7 through 10 are additional examples of tactical air signal battalions.

Chart 1. Tactical Air Division-Level Signal Battalion  
 This chart in its entirety is classified TOP SECRET RUFF



NOTE: These figures reflect the largest number of each type of equipment observed in any air signal battalion at any one time.

11. (TSR) **Signal Company.** The signal company comprises the following equipment: tactical command and control mobile communications vehicles such as the R-102M/140,<sup>9</sup> R-118 BM3, R-401/405, P-299M type, and the R-133 TWIN EAR troposcatter relay set; a combat control vehicle, BTR-60P/60PB forward air controller (FAC); and various R-800 series<sup>8</sup> command and control radio vehicles which are indicative of an SAF unit.

12. (TSR) **The BTR-60P/60PB FAC** is one of the key pieces of equipment in the identification of a tactical air signal battalion. This combat control vehicle is distinguished by the presence of an auxiliary generator mounted at the rear of either a BTR-60P or BTR-60PB armored personnel carrier (APC). It operates as an FAC and is equipped with a variety of communications equipment, including the R-829/832 very high frequency (VHF) discone antennas and R-401/405 VHF/ultrahigh frequency (UHF) radio relay antennas (Figures 3 and 4). This type of equipment would be essential in forward air control operations which include strike reconnaissance, strike/interdiction control, and CAS coordination for combat missions. Aircraft are guided to the target area by the FAC commander, who is familiar with ground operations and trained to control air strikes.<sup>9</sup> The BTR-60P or BTR-60PB APC affords the FAC commander and crew some protection from hostile fire.

<sup>8</sup>R-800 series is the general term used to describe ground-to-air radio vehicles with an R-designation of 800 through 899. These vehicles are almost exclusively used by Soviet air forces. R-800 series are also capable of communicating with other ground radio vehicles.

13. (TSR) Besides performing a function essential to the success of CAS operations, the FAC commander also serves as a tactical air advisor to appropriate ground commanders conducting the ground phase of the operation. Prior to this report, the BTR-60P/60PB FAC was considered to be associated with ground forces EW units. However, it is now believed that this vehicle is and has been utilized by the SAF. Chart 2 contrasts the major identifying elements associated with both EW units and tactical air signal units.

14. (TSR) **Mobile Airfield GSE Unit.** The GSE unit consists of the following mobile airfield GSE: four flashing light beacons, four searchlight trucks, at least one mobile radio direction-finder (DF) station, and four to eight marker beacon transmitters. The function of this equipment is to assist in the navigational support provided when landing aircraft on natural-surface runways in the absence of an air traffic control (ATC) company (to be discussed later). This equipment can also be used in conjunction with AC&W radars to vector an aircraft (maintain it on a predetermined course) through a zone of operation.

**AC&W Radars and AC&W Radar Company**

15. (TSR) AC&W radars (also known as EW radars) are used by PVO Strany and PVO Voysk air defense forces\* and now appear to be supporting tactical air signal units as well. In addition to performing the functions of ground-controlled intercept (GCI), air warning (AW), acquisition, and EW, AC&W radars are used to direct incoming aircraft on a predetermined course and altitude (vector) into a zone of operation until control can be assumed by an FAC. The site from which the AC&W radars operate can also provide an aircraft with an additional check on its time and distance to the target area. This site is referred to as a vectoring and target designation point.<sup>2</sup>

16. (TSR) The AC&W radars organic to the AC&W company are LONG TRACK, THIN SKIN B, SIDE NET, FLAT FACE, SPOON REBT C/D, and BAR LOCK radars. Figure 3 shows camouflage and concealment employed by an AC&W company at a dispersal airfield. These radars exhibit several characteristics such as widely dispersed frequency bands, fast set-up/take-down time<sup>3</sup> (with the exception of the BAR LOCK radar), overlapping operating ranges, reliability, excellent tracking capability, and high mobility. As a result of its mobility characteristic, an AC&W radar company reportedly is capable of moving more than 100 miles in two days, allowing for time to stop twice to set up its radars and to continue directing the relocation of an air regiment.<sup>3</sup>

**ATC Company**

17. (TSR) The primary responsibility for establishing a dispersal airfield lies with the ATC company rather than the air signal battalion. An ATC company is subordinate to an airbase support battalion\* which is allocated to every operational airbase where an air unit of regimental strength is assigned.

\*The function of the airbase support battalion is to provide the basic supplies and services to efficiently operate the home base and alternate airfields. Even though the airbase support battalion is operationally subordinate to the air regiment it supports, it does not usually move with the air regiment if that regiment is permanently relocated to another airbase.

Chart 2. Comparative Chart of Tactical Air Signal Units and EW Units\*  
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	Non-Div Radios	Div Radios	TWIN EAR	BTR-80P/60PB FAC	R-122 PRONG REST	R-800 Series	AC&W Radars	Afd GSE	Standard Section Obstacle Course
Tac Air Sig Battalion	●	●	●	●		●	●	●	●
EW Battalion		●	●		●		●		
Tac Air Sig Regiment	●	●	●	●		●	●	●	●
EW Regiment		●	●		●		●		

\*NOTE: The information on this chart is considered accurate as of 1 August 1977.

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### TACTICAL AIR SIGNAL BATTALION AT A DISPERSAL AIRFIELD

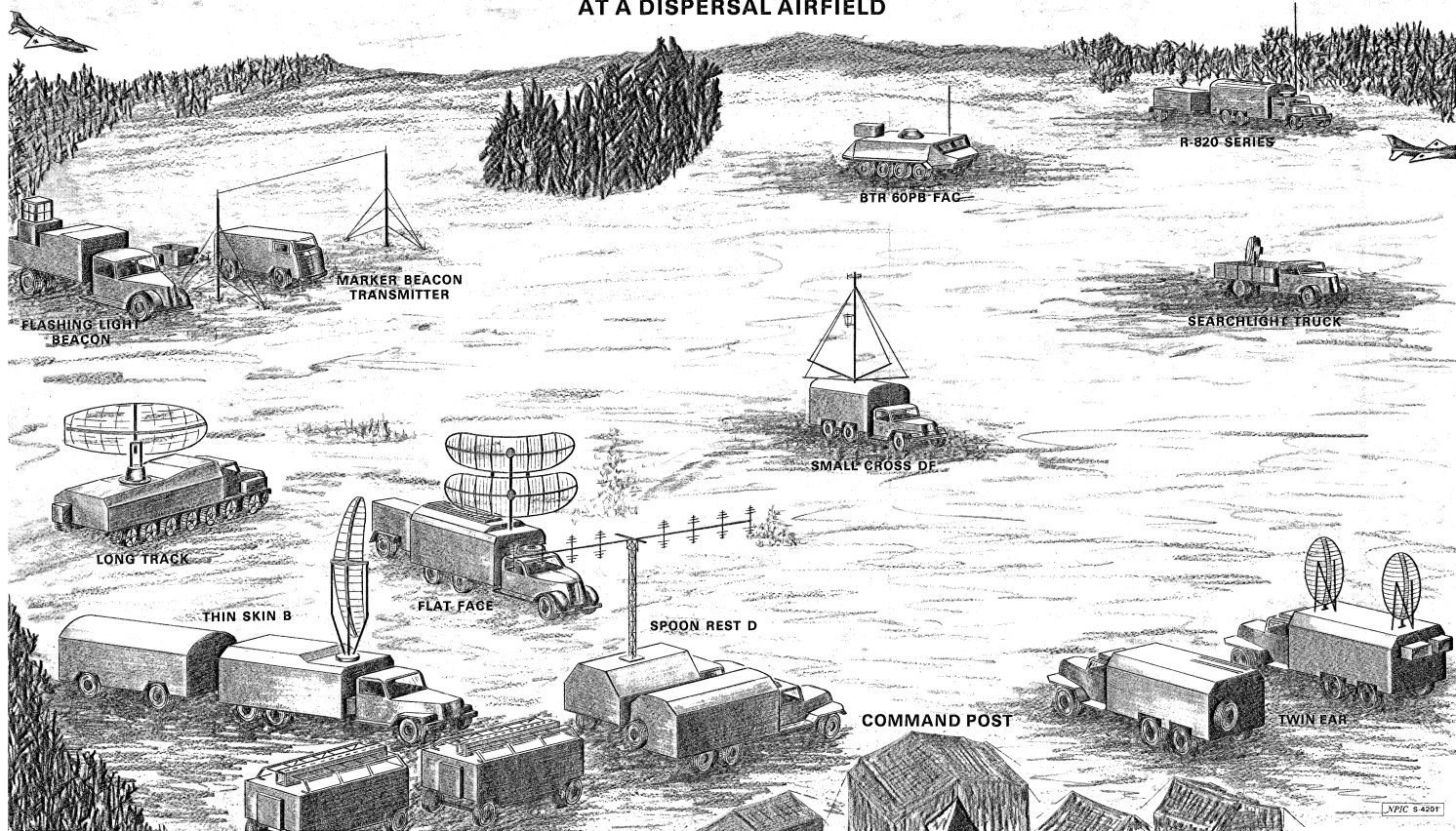


FIGURE 6. CONCEPTUAL DRAWING



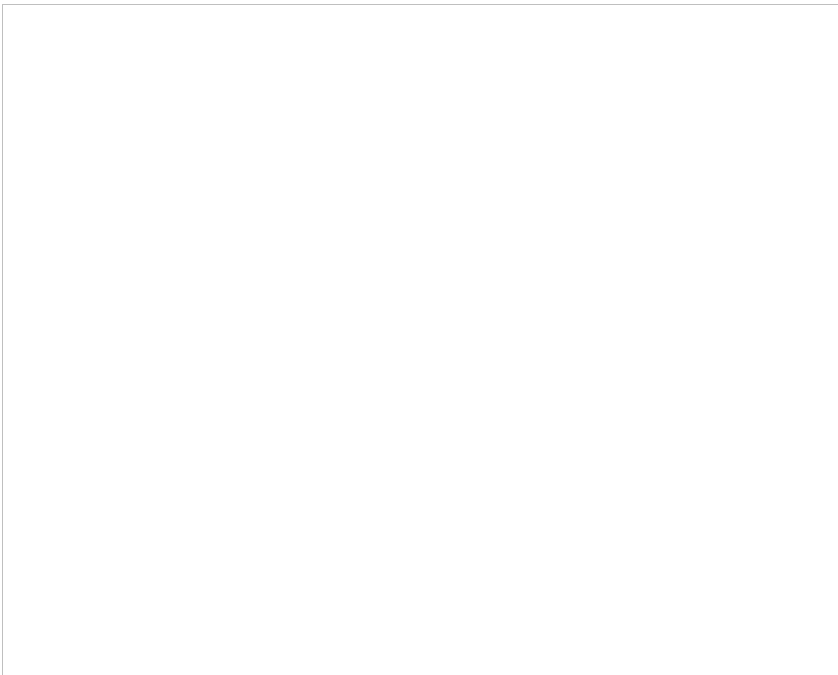
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18. (TSR [redacted]) Since an air signal battalion could be observed at the same airbase as an ATC company, certain types of equipment are used to distinguish the two units. Ground control approach radars such as ONE EYE, TWO SPOT, and LONG TALK and instrument landing system equipment such as THIN PATH, TALL PATH, HAY series, and the RSDN-4N short-range navigational beacon form the bulk of the equipment and are exclusively organic to an ATC company.

19. (TSR) At Tiraspol Airfield, the equipment organic to both the ATC company and the tactical air signal battalion are maintained in a common motor pool (Figure 11). A fence separates the equipment and vehicle storage building of the ATC company from the area occupied by the air signal battalion. If the fighter unit based there should deploy to its dispersal airfield, the ATC company has the responsibility to activate that dispersal airfield. Tiraspol's air signal battalion could then be available to activate another dispersal airfield, if required. As territory is gained by the Frontal units, the tactical air signal battalion would be used to activate airfields in this area.



**Tactical Air Signal Regiment**

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**Subordination**

20. (TSR) Tactical air signal regiments have been identified in nine MDs in the Soviet Union. A list of the tactical air signal regiments follows. (All of the IDHS codes of the installations listed are subject to change; two installations in one city complex combine to form one regiment.)

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Installation Name	Geographic Coordinates	BE No	MD	USATC Series 200 Sheet No
Alma-Ata Army Bks N AL 7	45-22-56N 076-59-30E		Central Asian	0329-2
Chita Radcom Sta Kashtak	52-05-46N 113-25-56E		Transbaikal	0199-22
Chita Army Bks AL 13	52-02-56N 113-26-20E		Transbaikal	0199-22
Khabarovsk Army Bks AL 3	48-30-10N 135-04-55E		Far East	0204-22
Khabarovsk Radcom Xmtr Station Airfield 1	48-28-49N 135-07-51E		Far East	0204-22
Kiyev Vehicle Park*	50-25-00N 030-27-20E		Kiyev	0233-9
Lvov/Sknirov Airfield	49-48-47N 023-57-07E		Carpathian	0232-15
Minsk Army Bks Stepyanka SE AL 11	53-54-34N 027-40-17E		Belorussian	0108-14
Odessa Army Bks Tataraka North AL 13	46-27-22N 030-40-53E		Odessa	0250-8
Odessa Airfield Central	46-25-40N 030-40-37E		Odessa	0250-8
Riga Military School	56-57-20N 024-04-20E		Baltic	0153-16
Tbilisi Army Bks Samgori AL 20	41-41-20N 044-53-00E		Transcaucasus	0325-12
Tbilisi AW Facility	41-42-52N 044-49-45E		Transcaucasus	0325-12

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\*The barracks area associated with this vehicle park has not been located.

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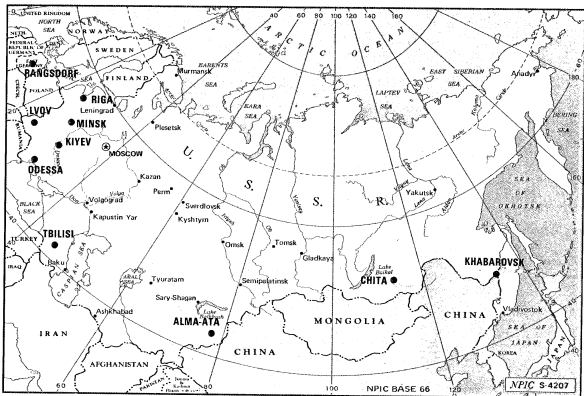
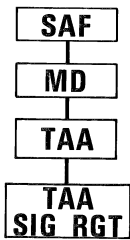


FIGURE 12. LOCATIONS OF SOVIET TACTICAL AIR SIGNAL REGIMENTS

21. (TSRU) The regiments are in the general vicinity of both TAA headquarters and MD headquarters (Chart 3).<sup>1</sup> A tactical air signal regiment is probably in each MD which includes a TAA. A tactical air signal regiment has not been located in those MDs without a known TAA organization. The subordination relationship between SAF Headquarters, Moscow, and an air signal regiment is depicted in the diagram below:



**Mission**

22. (SECRET) The Soviets probably established the air signal regiment during the post-World War II years. It was then that combat support elements were probably established for the newly organized independent SAF.

23. (S/WNINTEL) Information concerning the mission and functions of an air signal regiment was obtained from a former member of the SAF 43rd Independent Communications Regiment in Odessa.<sup>11</sup> The mission of an air signal regiment is to establish communications links between the TAA CPs (main, alternate, and probably rear) and its subordinate CPs at natural-surface (dispersal) airfields.<sup>12</sup> The regiment is also equipped to establish communications links with MD/Front headquarters, other Front elements, other aviation units, and higher echelons. Figure 13 illustrates a simplified, conceptualized projection of the primary communications links established by an air signal regiment during field deployment.

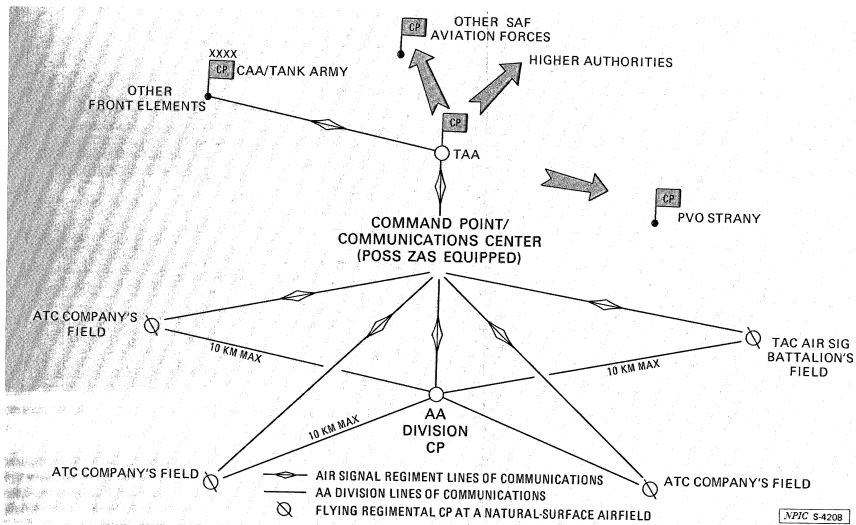


FIGURE 13. CONCEPTUAL ILLUSTRATION OF PRIMARY COMMUNICATIONS LINKS DURING TACTICAL AIR SIGNAL FIELD DEPLOYMENT

Chart 3. Tactical Air Signal Regiments and Related SAF Installations  
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Tac Air Signal Regt	Air Army/MD <sup>3</sup>	Prob SAF Radcom Station	Nearest Airfield
Alma-Ata Army Bks N AL 7	73rd AA Central Asia MD	Alma-Ata Radcom A AM BC Xmttr Pokrovka	Alma-Ata Airfield North
Chita Army Bks AL 13 Chita Radcom Sta Kashtak	23rd AA Transbaikalian MD	Chita Radcom Sta Kashtak	Chita Northwest Airfield
Khabarovsk Army Bks AL 8 Khabarovsk Radcom Xmttr Sta Afid 1	1st Independent AA/Far East MD	Khabarovsk Radcom Xmttr Sta Afid 1	Khabarovsk Airfield
Kiyev Vehicle Park	17th AA Kiyev MD	Kiyev Radcom Sta S	Kiyev/Zhulyany Airfield
Lvov/Sknilov Airfield	14th AA Carpathian MD	Unk	Lvov/Sknilov Airfield
Minsk Army Bks Stepyanka SE AL 11	26th AA Belorussian MD	Unk	Minsk/Stepyanka Airfield
Odessa Army Bks Tataraka N AL 3 Odessa Airfield Central	5th AA Odessa MD	Odessa Radcom Xmttr Sta Central Afid West	Odessa Airfield Central
Riga Military School	15th AA Baltic MD	Unk	Riga Central Airfield
Tbilisi Army Bks Sangori AL 20 Tbilisi AW Facility	34th AA Transcaucasus MD	Unk	Tbilisi/Vaziani Airfield

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**Description**

24. (TSR) Six representative air signal regiments have been selected to illustrate the basic features common to all the regiments. Chita (Figure 14), Khabarovsk (Figures 15 and 16), Alma-Ata (Figure 17), Minsk (Figure 18), Odessa (Figures 19 and 20), and Rangsdorf<sup>2</sup> (Figure 21) appear to be the best equipped and most active of the ten regiments identified.

25. (TSR) It is estimated that a typical air signal regiment garrison comprises approximately 700 to 1,000 personnel.<sup>13</sup> The garrison contains a headquarters/administration building, a messhall, barracks facilities, several support buildings, at least two vehicle storage buildings, and a standard section obstacle course.

26. (TSR) Equipment stored in the regiment's vehicle storage areas is similar to the types of equipment found in the air signal battalion. However, unlike the battalion, the communications equipment is parked in a definite unit structure and in greater numbers. Also, nondivisional\* communications equipment (R-408 troposcatter relay, R-410 troposcatter relay, and the R-400/404) is not generally seen in the air signal battalion.

27. (TSR) The greater numbers of communications equipment seen with the regiment is expected since the regiment may be tasked with extensive duty assignments generated by air defense, tactical air, ground, and higher level authorities. A given regiment (Chart 4) comprises a non-divisional radio relay battalion; two radio battalions; a mobile airfield GSE unit; a communications center unit; a transport and supply company; and, in some instances, elements of an AC&W radar battalion (see paragraph 39). Examples of equipment associated with tactical air signal regiments are illustrated in the final section of this report. The regiment's table of organization and equipment (TO&E) emphasizes the diversity of communications equipment well suited for contacting the aforementioned authorities.

\*Nondivisional refers to ground forces communications equipment usually organic to army and/or Front-level units.

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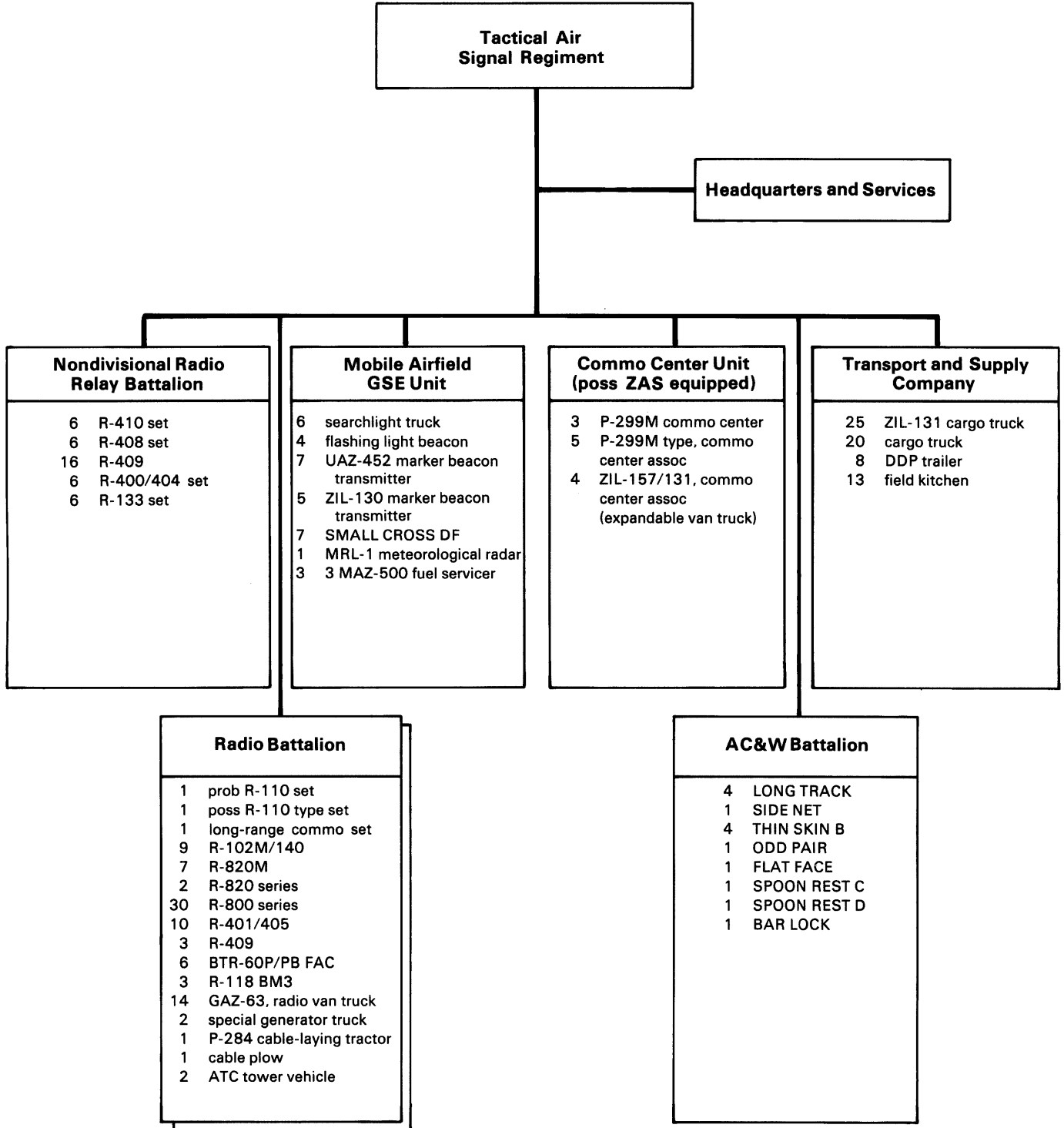
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Chart 4. Tactical Air Army-Level Signal Regiment  
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Note: These figures reflect the largest number of each type of equipment observed in any air signal regiment at any one time.

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28. (TSR) **Nondivisional Radio Relay Battalion.** During the spring of 1976, a nondivisional radio relay battalion was identified with the air signal regiment at Chita (Figures 22 and 23), Khabarovsk (Figure 16), and Alma-Ata (Figure 24). Prior to this time, air signal regiments consisted of two radio battalions, a communications control unit, a mobile airfield GSE unit, an AC&W battalion, and a transport and supply company. Two to six TWIN DISH (R-408) sets, two TWIN EAR (R-133) troposcatter sets, two R-409, and one probable R-110 high frequency (HF) set were the only nondivisional equipment seen with an air signal regiment. The addition of the nondivisional radio relay battalion significantly upgraded the regiment's capability to communicate at higher echelons and with a greater number of channels.

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29. (TSR) This battalion consists of six TWIN PLATE<sup>14</sup> (R-410) troposcatter relay sets, six TWIN EAR<sup>15</sup> (R-133) troposcatter relays sets, six R-400/404 UHF radio relay sets, and 16 R-409\*\*VHF/UHF CATS PAW radio relay vehicles. The equipment from each of the three nondivisional radio relay battalions identified was stored in an open vehicle parking area separate from each of the regiment's two radio battalions. The quantity of nondivisional radio relay equipment given above is believed to be the minimum authorized to each air signal regiment.

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30. (TSR) Two TWIN PLATE sets and 12 R-400/404 radio relay vehicles were first observed at the Minsk air signal regiment during the spring of 1976 (Figure 25). The introduction of this equipment at Minsk and the construction of a new vehicle storage building adjacent to the radio battalion area suggest that a nondivisional radio relay battalion will be deployed there in the near future.

31. (TSR) The purpose of an air signal regiment's nondivisional radio relay equipment is exemplified by the many high level subscribers that employ troposcatter relay and nondivisional radio equipment. For instance, satellite imagery have detected TWIN PLATE equipment with MD/Front-level authorities and army-level authorities; COMINT sources have recorded TWIN DISH participating in PVO Strany<sup>3</sup> and General Staff

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<sup>14</sup>A set, when used to describe troposcatter equipment, denotes two troposcatter relay antennas with one or more support vehicles. When in an operational configuration, one or more sets make up either a troposcatter terminal station or a troposcatter relay station.

<sup>15</sup>Note: The R-409 has also been seen with division-level signal battalions.

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(GS)<sup>10</sup> communications networks; the R-400/404 and R-409 have been employed by army and Front commands; and the TWIN EAR has been seen with mobile missile systems, ground forces units, and Soviet air forces.

32. (S) **Radio Battalion.** Reports obtained from former members of the air signal regiment in Riga<sup>11</sup> and Odessa<sup>12</sup> claimed that their respective regiments contained two radio battalions. Examples of radio battalions are seen in Figures 19, 26, and 27. The former members made no references to a third battalion consisting of nondivisional radio relay equipment.

33. (TSR) Two well-defined vehicle parking areas were observed in the main storage area of each of the six representative air signal regiments. The number of radio vehicles observed in each of the two vehicle parking areas (battalion areas) varied from 30 to 80. These radios are listed in the TO&E table (Chart 4). The number of radio vehicles listed in the chart reflect the largest number of each type imaged at an installation at any one time. An accurate assessment of the actual numbers of radio vehicles could not be determined because of such factors as covered vehicle storage (see Illustrated Equipment, Mobile Airfield GSE, Figure 81). However, the overall types and numbers of equipment observed are more than adequate to establish dependable communications links between command-level units. Flight operation equipment such as the R-800 series radios would be used to communicate with aircraft, direct emergency rerouting, and assist in the ATC and landing of aircraft.

34. (TSR) **Mobile Airfield GSE Unit.** Mobile airfield GSE is not parked in its own unit area, with the exception of that at Chita (Figure 28), but is mixed with other vehicles organic to the radio battalions. At least four flashing light beacons, four searchlight trucks, four UAZ-452 marker beacon transmitters, and four SMALL CROSS DF vehicles are probably allocated to each radio battalion.

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35. (TSR) **Communications Center Unit.** A communications center unit was observed in a wall-secured area within the Odessa (Figure 19) and Minsk (Figure 25) air signal regiment garrisons. Equipment observed in this unit consisted of the P-299M communications center vehicle, the P-299M-type communications center-associated vehicle, a probable expandable-type van, and a few ZIL-157/131 box-bodied van trucks. The probable function of these vehicles is to control message traffic via cable or radio vehicles from several widely dispersed radio stations, each as far away as 10 km.<sup>18</sup>

36. (TSR) The location of these vehicles during field deployment has been designated a command point or communications center. The command point acts as a central junction or switchboard which disseminates all messages to the TAA headquarters. Figure 13 depicts this command point.

37. (S) A top secret Soviet encoding device is reportedly<sup>19</sup> connected to radio equipment in order to encrypt messages. It is suspected that this device is more likely to be mounted in these communications center vehicles only when they are separately secured or seen at the command point. Unless observed in these two cases, the P-299M-type communications center-associated vehicles are used for their normal communications function.

38. (TSR) A ZAS (Soviet acronym for *Zeskrechivayushchaya Aparatura Svyazi* which means communications encrypting apparatus) unit was reported to be at Riga and Odessa by the previously mentioned former regiment members. The units' vehicles were said to be stored in a separately secured parking area and the ZAS encoding devices installed in van bodies mounted on GAZ-63, GAZ-66, and ZIL-157 chassis. These are the same chassis types which make up the communications center unit. Figure 29 shows a communications center point.

with its vehicles connected by cable to a mobile communications satellite (comsat) station (note that comsat equipment is not associated as yet with tactical air signal regiments). The insets on Figure 29 are photographs of the Minsk communications center unit and of communications center-associated vehicles.

39. (TSR) **AC&W Radar Battalion.** Elements of an AC&W battalion have only been identified at the Chita (Figure 30), Minsk (Figure 31), and Tbilisi regiments. A small number of AC&W radars have been observed at Alma-Ata. The reasons for the absence of radars at the other regiments are unknown. It is possible that the regiments are not at full strength or that the radars are situated at other installations.

40. (TSR) **Transport and Supply Company.** Each tactical air signal regiment contains a transport and supply company (Figures 18 and 21). This unit contains approximately 30 ZIL-157/131 cargo trucks which are used to transport clothing, food, logistical supplies, and personnel. Several mobile field kitchens, medical vehicles, mobile electronic equipment repair shops, chemical defense equipment, and dual-axle trailers are also observed with this unit.

**Other TAA Regiment-Associated Units and Equipment**

41. (TSR) **Electronics Countermeasures (ECM) Equipment.** An ECM air defense unit was observed collocated with air signal regiments at Minsk (Figure 32) and Tbilisi (Figure 33). It is believed that because of their proximity to a tactical air signal regiment the ECM units are probably subordinated to the TAA of their respective MD. The equipment observed at Minsk includes five KING PIN, nine TUB BRICK, one CHEESE BRICK, two TWIN BOX, nine unidentified radar jammers, and five R-820 series VHF radio vans. The ECM equipment observed at Tbilisi AW Facility, which contains elements of an air signal regiment, includes six TUB BRICK and one TWIN BOX.

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42. (TSRU) **SAF Radcom Station.** At least one fixed HF radio communications (radcom) facility is believed to support each TAA. It is usually adjacent to elements of the TAA's signal regiment. An HF radcom station was observed at or near six of the ten regiments. These included Chita, Alma-Ata, Rangsdorf, Kiyev (Figure 34), Odessa, and Khabarovsk. Communications vehicles organic to a nearby tactical air signal regiment have been seen at each of these radcom stations (Figure 35). Routine message traffic to each TAA from SAF Headquarters, Moscow, is probably received at such facilities. Under certain circumstances special notifications of unit alerts, warning of an attack, CPX, FTX, and contingency directives are probably sent to a TAA headquarters via HF radio communications. Chart 3 lists these facilities. It is believed that the Soviets emphasize the importance of maintaining mobile signal units responsible for directing combat operations during an emergency. Accordingly, air signal regiments are equipped with mobile communications equipment to supplement the SAF command and control network.

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43. (TSR) **Special Purpose Aircraft.** Each of the tactical air signal regiment installations is close to an SAF airfield or a combination SAF and civilian airfield (Chart 3). Presumably, each MD headquarters is also near an airfield that it uses for administrative, tactical, and dignitary flights. Special purpose aircraft, such as an airborne CP/relay link, are probably authorized for use by each MD although no other evidence supports this claim. Communications links between special purpose aircraft and tactical air signal regiments are feasible because of the many R-800 series ground-to-air command and control radios organic to the regiments. One such special purpose aircraft was identified at Alma-Ata Airfield North. A newly identified modified CURL is occasionally observed parked on a hardstand at this airfield (Figure 36). The modified CURL appears to have blade antenna attachments, suggesting that it could be used as an MD special purpose aircraft. Two modified CURL have also been seen at Chita Northwest Airfield.

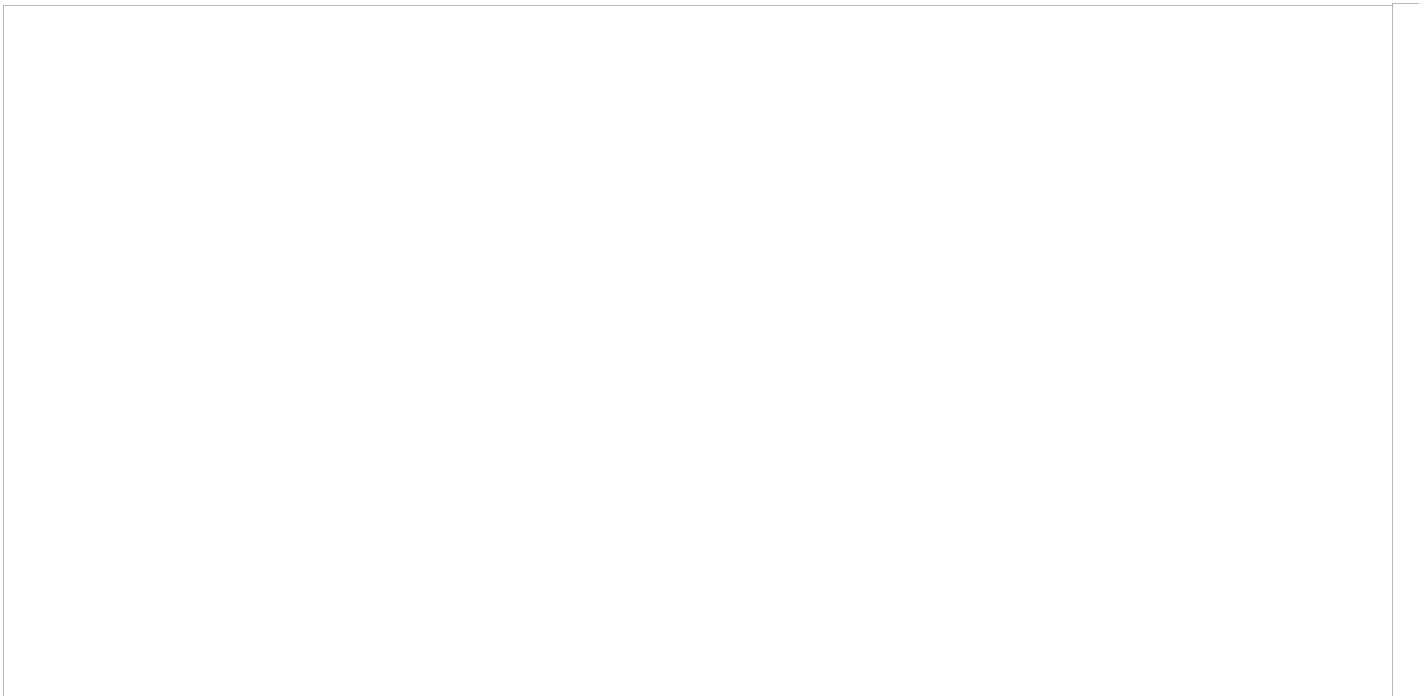
44. (TSR) **Training.** Basic training for recruits, driver training, and specialized radio/radar training is probably conducted at the regimental level. Noncommissioned officers (NCOs) probably receive specialized training at technical schools in the USSR. One such SAF communications training center and probable NCO school was identified on overhead photography at Smolensk Army Barracks Southwest. Figure 37 shows the physical layout of and communications equipment usually observed at the Smolensk installation.

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45. (TSR) Air signal regiments at Minsk and Chita use the LONG TRACK radar (and other radars) to train recruits in operation and maintenance. One LONG TRACK radar with its sail removed is generally observed in the center of the AC&W battalion areas of both installations.

46. (TSR/ ) Specialized radio training for each regiment is probably conducted using radio equipment mounted in detached van bodies placed on hardstands (Figure 21). Each regiment usually conducts its own field training exercise for about two weeks, twice a year during summer and winter. The frequency of large-scale CPX or FFX is unknown but is thought to be minimal in view of the fact that the last extensive exercise ("DVINA" maneuver<sup>23</sup>) occurred in the summer of 1970.

47. (TSR) **Equipment Distribution Process.** The SAF distributes equipment to airfields, air force schools, and air signal units through regional air depots.\* Communications equipment, GSE, and air surveillance radars found at these depots are similar to those seen with tactical air signal units. In the event of equipment loss as a result of hostile actions, it is conceivable that the damaged equipment could be replaced by equipment drawn from an air depot.

\*The Soviets can also deliver equipment directly to their installations from production plants.

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48. (TSR) An example demonstrating the probable delivery of communications equipment from an air depot to an air signal unit was obtained from photography of the Chita area in early spring 1976. Two TWIN PLATE (R-410) troposcatter relay sets were seen at Chita Air Depot with GSE [redacted] for the first time (Figure 38). [redacted] two TWIN PLATE sets were observed at Chita Radcom Station Kashtak, also for the first time (Figure 23). New TWIN PLATE relay equipment was also seen at three other air signal regiments (Chita, Khabarovsk, and

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Minsk) during spring 1976. This distribution pattern agrees with the usual Soviet logistical practice of delivering one type of equipment to several military districts during the same timespan.

49. (TSR) Certain other ground forces-related radio stations, in addition to TWIN PLATE troposcatter relay equipment, are maintained at air depots with GSE. In those depots where several radio stations are usually maintained, it is reasonable to expect that they were requisitioned specifically for air signal units.

50. (TSR) **Tactical Air Signal Field Application.** The Khabarovsk signal regiment was recently engaged in preparations for its probable summer training exercise for 1977. [redacted]

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[redacted] provided evidence that TWIN PLATE (R-410) troposcatter relay equipment could have been used for this communications activity.

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51. (TSR) The Khabarovsk air signal regiment contains six TWIN PLATE sets which are stored at this radcom station. [redacted] one field-deployed TWIN PLATE set and a recently erected tent camp were seen just outside the nondivisional radio relay battalion vehicle park (Figure 39). A second TWIN PLATE set was absent from the same vehicle park. A four-day cessation period

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in the communications activity began [redacted] Coverage on this date (Figure 40) shows all of the TWIN PLATE sets back in garrison. A continuation of the communications activity began [redacted] satellite imagery showed the same garrison partially vacated (Figure 41) and one TWIN PLATE station operationally deployed 1.6 nautical miles (nm) from the garrison (Figure 42). The regiment's troposcatter equipment was probably a participant in the communications activity.

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52. (TSR) [redacted] It was later realized that this activity was probably a dress rehearsal for the Far East Frontal Aviation CPX conducted during the second week in July 1977. The exercise involved the main and alternate CPs of TAA headquarters, Khabarovsk, in communications with subordinate composite divisions, reconnaissance groups, and utility groups.<sup>29</sup>

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53. (TSF) [redacted] This example demonstrates the nature of activity that can be observed when air signal regiments are deliberately monitored. Frequent monitoring of air signal regiments together [redacted] could provide useful indications and warnings information concerning air forces.

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**Illustrated Equipment**

54. (TSR) [redacted] The following 68 annotated photographs (Figures 43 through 110) depict the bulk of the equipment mentioned in this report. Equipment seen in tactical air signal units is presented with emphasis on the identifying features of the equipment during transit or in a temporary storage configuration. In addition, photographs of ECM equipment are shown. The vehicles annotated in this report are referred to by their accepted nomenclature. The exceptions to this are the long-range communications set (Figure 44), the possible R-110-type set (Figure 46), the P-299M-type vehicle (Figure 72), the R-820 series radio (Figure 64), and R-800 series radio (Figure 65). In these instances, the equipment was assigned a tentative name based on their association with other equipment of known functions and/or on the identification of their signature components. These illustrations are grouped into five major categories for easy reference: Nondivisional Radios (Figures 43-63), Radios (Figures 64-77), Mobile Airfield GSE (Figures 78-92), AC&W Radars (Figures 93-104), and ECM Equipment (Figures 105-110).

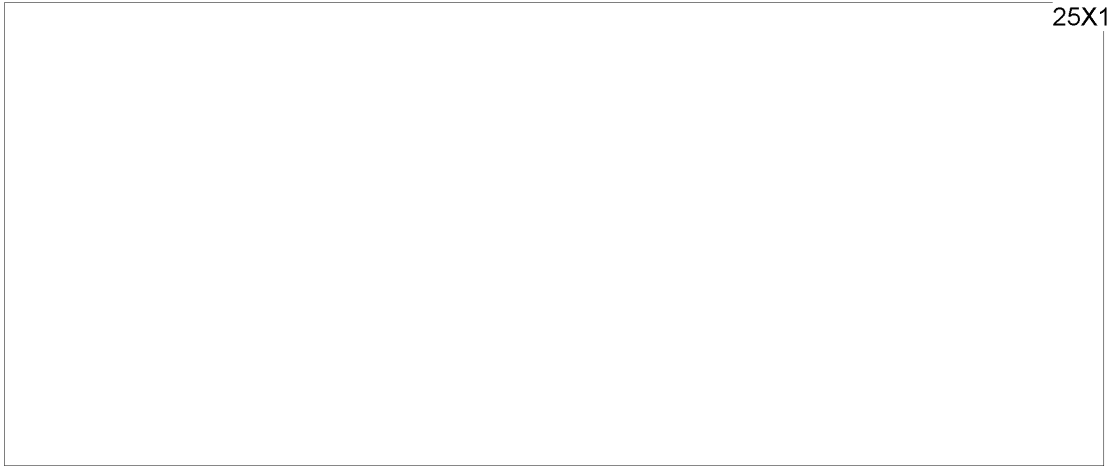
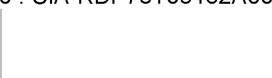
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**MAPS OR CHARTS**

SAC. US Air Target Chart, Series 200, Various Sheet numbers, scale 1:200,000 (UNCLASSIFIED)

**DOCUMENTS**

1. DIA. DDI-1100-2-75, *Soviet Ground Force Organization Guide*, Jun 75 (SECRET) [redacted] 25X1



3. DIA. DST-1370S-279-75-SAO, [redacted] *Tactical Air Command and Control Study, USSR (U)*, Apr 75 (TOP SECRET RUFF) [redacted] 25X1

4. NPIC [redacted], RCA-05/0003/76, *Soviet Mobile Airfield Flight Operation and Ground Support Equipment* May 76 (TOP SECRET RUFF) [redacted] 25X1

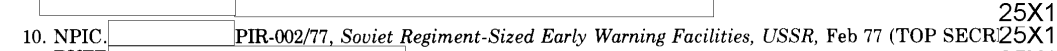


6. DIA. DDI-1300-6B-76-SI, *Soviet (U) Aircraft Order of Battle*, Jul 76 (TOP SECRET) [redacted] 25X1

7. USAIIC. RAC-24/8002/76, *Obstacle Courses Warsaw Pact Countries (U)*, Apr 76 (SECRET) [redacted] 25X1



9. CIA [redacted], OIA/LFD 175/77, *R-102M/140 HF Radio Van* [redacted] (TOP SECRET RUFF) [redacted] 25X1



10. NPIC [redacted], PIR-002/77, *Soviet Regiment-Sized Early Warning Facilities, USSR*, Feb 77 (TOP SECRET RUFF) [redacted] 25X1

11. DoD. 1-521-0287-73 (5607-08), *43rd Independent Air Communications Regiment Odessa*, 19 Jun 73, Date of Info: May 69—May 71 (CONFIDENTIAL) [redacted] 25X1



14. USAIIC. RAC-24/8001/76, *TWIN PLATE (U)*, Mar 76 (TOP SECRET RUFF) [redacted] 25X1

15. USAIIC. RAC-24/5011/75, *TWIN EAR (U)*, May 75 (SECRET) [redacted] 25X1

16. DIA. DI-220-45-73-SAO, *Soviet Signal Units*, Feb 73 (TOP SECRET RUFF) [redacted] 25X1

17. DoD. K-311/00391-77, *Training at an Independent Signal Regiment in Riga, Baltic Military District*, 24 Mar 77, Date of Info: 1970—1972 (CONFIDENTIAL) [redacted] 25X1



19. Army. ARMACSI, SR-12-SNF-76 *Profile of the Soviet Category II Motorized Rifle Division: The First Guard's Motorized Rifle Division*, Apr 76 (SECRET) [redacted] 25X1



**RELATED DOCUMENT**

USAREUR. PAM 30-60-7, *Identification Guide, Soviet Box Bodied Vehicles (U)*, 4th ed, Part two, 2 Apr 76 (CONFIDENTIAL) [redacted] 25X1

**REQUIREMENT**

Project 121200NF



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## List of Conversion Factors by Classification

### UNITS OF LENGTH

<i>IF YOU HAVE</i>	<i>MULTIPLY BY</i>	<i>TO OBTAIN</i>
MILLIMETERS	0.0394	INCHES
CENTIMETERS	0.3937	INCHES
INCHES	25.4000	MILLIMETERS
INCHES	2.5400	CENTIMETERS
FEET	0.3048	METERS
FEET	0.0003	KILOMETERS
YARDS	0.9144	METERS
METERS	3.2808	FEET
METERS	0.0005	MILES(NAUTICAL)
METERS	1.0936	YARDS
KILOMETERS	3280.8400	FEET
KILOMETERS	0.6214	MILES(STATUTE)
KILOMETERS	0.5400	MILES(NAUTICAL)
MILES(STATUTE)	1.6093	KILOMETERS
MILES(NAUTICAL)	6076.1154	FEET
MILES(NAUTICAL)	1.8520	KILOMETERS
MILES(NAUTICAL)	1852.0000	METERS

### UNITS OF MASS

<i>IF YOU HAVE</i>	<i>MULTIPLY BY</i>	<i>TO OBTAIN</i>
KILOGRAMS	2.2046	POUNDS(AVOIR.)
POUNDS(AVOIR.)	0.4536	KILOGRAMS
SHORT TONS	0.9072	METRIC TONS
METRIC TONS	1.1023	SHORT TONS
METRIC TONS	0.9842	LONG TONS
LONG TONS	1.0160	METRIC TONS

### UNITS OF VOLUME

<i>IF YOU HAVE</i>	<i>MULTIPLY BY</i>	<i>TO OBTAIN</i>
LITERS	0.2642	GALLONS
LITERS	0.0063	BARRELS(POL)
LITERS	0.0010	CUBIC METERS
GALLONS	3.7854	LITERS
GALLONS	0.1337	CUBIC FEET
GALLONS	0.0238	BARRELS(POL)
GALLONS	0.0038	CUBIC METERS
BUSHELS	0.0352	CUBIC METERS
CUBIC FEET	7.4805	GALLONS
CUBIC FEET	0.1781	BARRELS(POL)
CUBIC FEET	0.0283	CUBIC METERS
CUBIC YARDS	0.7646	CUBIC METERS
BARRELS(POL)	158.9873	LITERS
BARRELS(POL)	42.0000	GALLONS
BARRELS(POL)	5.6146	CUBIC FEET
BARRELS(POL)	0.1590	CUBIC METERS
CUBIC METERS	1000.0000	LITERS
CUBIC METERS	264.1721	GALLONS
CUBIC METERS	35.3147	CUBIC FEET
CUBIC METERS	28.3776	BUSHELS
CUBIC METERS	6.2898	BARRELS(POL)
CUBIC METERS	1.3080	CUBIC YARDS

### UNITS OF AREA

<i>IF YOU HAVE</i>	<i>MULTIPLY BY</i>	<i>TO OBTAIN</i>
SQUARE CENTIMETERS	0.1550	SQUARE INCHES
SQUARE INCHES	6.4516	SQUARE CENTIMETERS
SQUARE FEET	0.0929	SQUARE METERS
SQUARE YARDS	0.8361	SQUARE METERS
SQUARE METERS	10.7639	SQUARE FEET
SQUARE METERS	1.1960	SQUARE YARDS
SQUARE METERS	1.0000	CENTARES
SQUARE METERS	0.0002	ACRES
SQUARE METERS	0.0001	HECTARES
ACRES	4046.8564	SQUARE METERS
ACRES	0.4047	HECTARES
HECTARES	10000.0000	SQUARE METERS
HECTARES	2.4711	ACRES

**Top Secret**



**Top Secret**