(JSC CRI) Cyclone:
Exposing an FSB Technology Transfer Operation

A TAIA GLOBAL REPORT

[This page intentionally left blank]

This report was researched and written by members of Taia Global's Russia team, one of whom is an experienced intel officer who ran the branch that looked at Russian proliferation.

Taia Global provides global risk assessment and counter-reconnaissance products for aerospace, defense, and financial corporations.

COPYRIGHT 2015 TAIA GLOBAL INC. ALL RIGHTS RESERVED

Taia Global, Inc.
1650 Tysons Blvd., Suite 1580
McLean, VA 22102

(855) 777-TAIA | https://taia.global | info@taiaglobal.com

Joint Stock Company Central Research Institute (JSC CRI) Cyclone: Exposing an FSB Technology Transfer Operation

Executive Summary

Taia Global recently obtained e-mails of Alexey Sergeyvich Beseda, the son of Colonel-General Sergey Beseda, Director of the Federal Security Service (FSB) Fifth Directorate.

E-mails date back to 2006 and include conversations with relatives of key Russian political figures such as the nephew of the Chairman of Russia's Military-Industrial Commission, Dmitry Rogozin and Russian businessman Konstantin Nikolayev.

The emails also reveal the modalities used to obtain foreign technology critical to Russian defense industries by bypassing foreign sanctions.

The emails show that in contemporary Russia, privileged insiders exploit even sensitive intelligence operations for private gain.

General Discussion

State Corporation Rostec (Государственной корпорации Ростех)

Rostec is the Russian Federation owned holding company responsible for "the furtherance of state policy on industrial development and modernization."[1] Rostec's General Director is appointed by the Russian Federation President. Rostec Management and Supervisory Board consists of senior government officials (see Appendix A).

Rostec's structure includes 700 companies organized into 14 holding groups with nine groups focused on defense industries and five on civilian industries[2]. Rostec's goal is increasing the technical capability of Rostec holdings and, especially in defense industry, reducing Russia's dependence on foreign technology. Rostec also looks for opportunities to expand Russian exports with the only notable success registered in the defense industry sector through Rosoboronexport.

---

[1] http://rostec.ru/en/about

[2] Most of the Russian industrial entities included on the Specially Designated Nationals and Blocked Persons List (SDN List) for Ukraine-related sanctions are Rostec holdings.

Ruselectronics (Росэлектроника) is Rostec's holding company for electronic components, semiconductor material and microwave products. According to Rostec, Ruselectronics (see Appendix B) provides about 80 percent of the electronic components used by Russian strategic industries to, again, reduce Russia's dependence on foreign suppliers.

JSC CRI Cyclone is Ruselectronics company working on thermal imaging systems electronic displays (see Appendix C). Cyclone's major customers are in the security sector including the Ministry of Interior (MVD) and the Federal Security Service (FSB). Cyclone thermal imaging systems are frequently found on Russian armored vehicles and infantry weapons.

Cyclone is listed on the 2009 Strategic Industry list (the most recent) with Cyclone receiving government funding and exempt from privatization.

FIGURE 1: CYCLONE THERMAL IMAGING SYSTEM ON ARMORED VEHICLE TURRET

JSC CRI Cyclone and Foreign Technology

A 2013 letter from Chairmen of the Russian Federation Military Industrial Commission Dimitry Rogozin to the Chairmen of the Russian Bank for Development and Foreign Affairs (Vnesheconombank)[3] identifies a critical deficiency affecting JSC CRI Cyclone's ability to produce modern weapons (see Appendix D).

According to the letter, Cyclone could not produce the microbolometer photodetector arrays necessary for uncooled thermal imaging systems. Cyclone could only obtain microbolometer arrays through purchase from foreign suppliers. However, the technology was subject to export restrictions and Russian state policy forbid production of weapon systems dependent on foreign suppliers. As a result, the Russian military only had a few hundred individual imaging systems available while NATO possessed

[3] Vnesheconombank is currently under US and EU sanctions for Ukraine-related activity.

hundreds of thousands. The letter sought Vnesheconombank financial support for Cyclone's effort to obtain the technology for domestic production of microbolometer photodetectors arrays.

The letter triggered a state supported project for Russian domestic production of the microbolometer photodetector arrays. The project established a new limited liability company Cyclone-IR (ООО ЦИКЛОН-ИК) inside JSC CRI Cyclone. However, both Russian business registration documents (see Appendix E) and LLC Cyclone-IR board meeting minutes show that Cyclone-IR as jointly owned by JSC CRI Cyclone and a private entity Rayfast Investment Ltd.

LLC Cyclone-IR board minutes from 2013 show JSC CRI Cyclone's 50% ownership established by providing facilities and equipment from existing Cyclone assets and a small equity investment. Rayfast Investments Ltd 50% ownership is solely an equity investment. The Rayfast 50% interest was also approved by a meeting of JSC CRI Cyclone's board of Directors. Vnesheconombank supported the project with loans.

Rayfast Investment Ltd.

Rayfast Investment Ltd's involvement warrants detailed examination for several reasons. First, JSC CRI Cyclone is state owned and, as a designated strategic industry, prohibited from privatization. LLC Cyclone-IR effectively partially privatizes state assets.

Second, Rayfast is registered in Cyprus with Director Michail Panagiota. Panagiota's passport (see Appendix F) shows Ms Panagiota as a Cypriot citizen born in in 1986.

Third, Rayfast documents show financial relationships with further obscure companies in a four level layer of ownership[4]:

(1) Ray fast is held by
(2) Bluebell Investments Trading Co., which is held by
(3) Bronzestone Enterprises Ltd., which is held by
(4) “KIOH” located at Testovskaya Street in Moscow

All the listed companies are registered offshore and none show the unique Russian tax ID number required by law.

The pattern of Russian company ownership moved offshore and obfuscated through multiple layers is a well known technique for money laundering, capital flight, and tax

[4] The ownership chain is so convoluted that it is shown on a spread sheet, possibly so participants can keep the chain straight. The final layer located at Testovskaya Street yields little useful information since Testovskaya Street is a short street bounding a large complex of apartment and office building under construction as part of the Moscow International Business Center.

avoidance. Former Russian Minister of Communication Leonid Reyman—a member of President Putin's St. Petersburg entourage—became famous as the Russian poster boy for corruption using such techniques.

LLC Cyclone-IR's board is also versed in financial manipulation. Cyclone-IR minutes show the board of directors as:

- Viktor Vasilievich Tarasov (current JSC CRI Cyclone director)
- Vladimir Evgenievich Busel (LLC Cyclone-IR director)
- Alexey Sergeyvich Beseda (son of Colonel-General Sergey Beseda director FSB Fifth Directorate)
- Roman Michailovich Rogozin (nephew of Deputy Prime Minister Dimitry Rogozin) Zarema Viktorovna Mamukaeva

Russian anti-corruption campaigners identified a development outside Moscow where government officials are building modest dachas as weekend retreats from the pressures of government. Colonel-General Sergey Beseda's simple 4.3 acre spread is registered to his son Alexey. Dachas are also registered to senior Rostec management (see Appendix G).

FIGURE 2: COLONEL-GENERAL SERGEY BESEDA DACHA

Russian press articles show the project's potential financial rewards. On February 6, 2014, Tass published an article on the project stating that the total investment to build the microbolometer photodetector array production facility could reach 3 billion rubles[5].

The article stressed that the facility would reduce Russia's dependence on foreign suppliers and permit Russia to enter the export market for thermal imaging systems valued at $20 billion. The article stated the project was a public-private partnership between Rostec, Roselektronika, Vnesheconombank, and Promtehnologiya, an investor in hunting and sporting rifles.

LLC Cyclone-IR planning documents state that revenue generated by the project will be kept internal to the company except for funds used to replay loans.

FIGURE 3: PRIME MINISTER MEDVEDEV HOLDS A PROMTECHNOLOGIES HUNTING RIFLE

[5] Approximately $170 million when the article appeared.

Russian Security Service Involvement

Taia Global analysts estimate that the FSB is involved in the project, especially in the acquisition of sensitive foreign technology. Vnesheconombank meeting minutes from 2014 show that the project loans are overseen by the Vnesheconombank's Director Department of Innovation and High Tech Oleg Demidov. The meeting approved JSC CRI Cyclone's internal transfer of funds to the project, however, the meeting specified that Cyclone's FSB funds not be used. The minutes are brief, however, the context indicates that the FSB has an interest in the project[6].

Taia Global analysts assess that LLC Cyclone-IR board member Alexey Sergeyvich Beseda is almost certainly an FSB officer. Alexey's father heads the FSB Fifth Directorate (see Appendix H). FSB careers are highly sought by ambitious young Russians as the route to influence and affluence. The sons of senior officers routinely use father's influence to secure FSB appointments. Alexey's current resume does not acknowledge his position with LLC Cyclone-IR. However, Alexey's resume does include positions with companies that have been exploited by the FSB previously and Russian companies that would provide cover for the FSB. Additionally, Alexey's listing as the owner of his father's dacha is a strong indication that he serves in a protected position.

Taia Global analysts assess that Rayfast representative Alexey Semenovich Belyaev is also likely an FSB officer since company documents show Belyaev working closely with Alexey Beseda arranging financial transactions.

Sanctions and Front Companies

Taia Global analysts assess that the project uses a front company in obtaining critical technology from Western suppliers. A briefing on the project—probably prepared for project participants—states that the project has identified the leading suppliers of needed special equipment. A few of the named suppliers are:

- Oxford Instruments plc (United Kingdom)
- SÜSS MicroTec AG (Germany)
- Santa Barbara Infrared Inc (USA)

The briefing states that the logistics of obtaining the special equipment are handled by Flybridge. Alexey Beseda emails show Alexey working with Maxim Ermakov of LLC Technology Company FlyBridge arranging imports of technical equipment.

In the current international political situation some of the project participants are already under US and EU sanctions with additional sanctions possible. As a result, the project almost certainly wants to disguise that imports are for a military program.

Flybridge's profile is consistent with that of a front company—probably set up by the FSB—that specializes in such acquisitions. Flybridge's business registration information

---

[6] The FSB is an acknowledged Cyclone customer and has an obvious interest in the technology.

(see Appendix I) states that Flybridge "performs wholesale trades and supports auxiliary transport activities such as cargo handling and storage." However, the Flybridge's registered address tracks to an apartment building north of the outer Moscow ring road near Sheremetyevo International Airport. Several other entities—including the instrument importer Nytek Instrument—are registered at the same address, a pattern consistent with an accommodation address.

LLC Cyclone-IR is also taking steps to disguise the fact that it is a military program[7]. In March 2014, LLC Cyclone-IR registered the domain name cyclone-ir.com through the Russian Network Information Center (RNIC). The domain name currently resolves to a web page listed as under construction. The contact information lists JSC CRI Cyclones address showing that they are both located at the same address. However, JSC CRI Cyclone is a known component of Russia's defense industries.

LLC Cyclone-IR then changed its name to LLC Photoelectric Devices and registered the domain name foto-ir.com in April 2014, again through RNIC. The new web site lists the company address as Testovskaya Street Number 10, an address in the new Moscow International Business Center[8]. The new web site details the many civilian applications for thermal imaging systems LLC Photoelectric Device pursues, including their use by fire and rescue services.

FIGURE 4: TESTOVSKAYA STREET NUMBER 10

---

[7] The information was posted on the company web site in English. The information, however, read like a computer translation of the Cyrillic page, a common practice on Russian web sites.

[8] Previous Taia Global research on an FSB front company targeting information technology showed that company registered at the Moscow International Business Center. The massive center, still under construction, provides excellent commercial cover.

Conclusion

Two key take-aways from this report are:

(1) The Cyclone IR operation reveals some of the modalities used to obtain foreign technology critical to Russian defense industries by bypassing foreign sanctions.

(2) The emails show that in contemporary Russia, privileged insiders exploit even sensitive intelligence operations for private gain.

The Beseda email archive consists of over 9,000 messages dated from 2006 to 2014. This report represents just one operation that Taia Global analysts have extracted from that collection. Analysis is ongoing.

Appendix A
Rostec Board of Directors and Supervisory Board
Board of Directors

Sergey Chemezov

CEO of Rostec

Vladimir Artyakov

First Deputy General Director

Dmitriy Shugaev

Deputy CEO, international affairs of Rostec

Nikolay Volobuev

Deputy CEO

Igor Zavyalov

Deputy CFO of Rostec

Dr Sergey Skvortsov

Deputy General Director

Sergey Kulikov

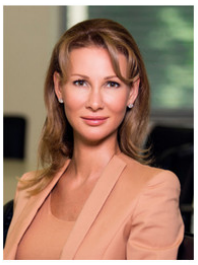
Executive director

Yuri Koptev

Chairman of the Science and Engineering Council

Natalya Borisova

Head of Book-keeping and Fiscal Accounting



Alla Laletina

Head of the Legal Department

Supervisory Board

Denis Manturov

Minister of Trade and Industry, Russian Federation

Sergey Chemezov

CEO of Rostec

Yuriy Borisov

Deputy Defence Secretary of Russian Federation

Larisa Brycheva

Assistant to the President of Russia – Head of State Legal Directorate in the Presidential Executive Office

Igor Levitin

Aide to the President of the Russian Federation

Yuriy Ushakov

Assistant to President

Anton Vaino

Deputy Head of the Presidential Administration

Aleksandr Fomin

Director of Federal Agency for military and technical cooperation

Appendix B
Ruselectronics Components

Ruselectronics currently consists of 123 companies organized in several groups. The companies are provided in English and Cyrillic.

List of subsidiaries and affiliates of JSC Russian electronics, as well as enterprise management functions which, in accordance with the decisions of the State Corporation Russian Technologies transferred to JSC Russian electronics

Subsidiaries and affiliates of Roselektronika

1. Scientific-Research Institute Girikond www.giricond.ru ;
2. Scientific-Research Institute of discharge tubes Plasma www.plasmalabs.ru ;
3. Scientific-Research Institute of Electronic Engineering Materials;
4. JSC Ryazan Plant-metal devices www.rmcip.ru/rus/indexrus.html ;
5. OJSC Russian Scientific Research Institute Elektronstandart www.elstandart.spb.ru ;
6. JSC Research Institute Ferro-Domain www.ferrite-domen.com ;
7. JSC Central Research Institute of Economy, management and information systems Electronics www.instel.ru ;
8. JSC Central Research Institute of instrumentation www.cime.ru ;
9. CJSC Trading House ROSEL ;
10. JSC Central Research Institute Electron www.electron.spb.ru ;
11. JSC Central Research Institute Cyclone www.cyclone-jsc.ru ;
12. JSC Nizhny Novgorod Institute of Technology and Production Organization;
13. JSC optocoupler www.optron.ru ;
14. JSC Moselektronproekt www.mosep.ru ;
15. Of logic www.logica.ru ;
16. JSC Special Design Bureau Iskra www.okbiskra.ru ;
17. Of ER complex systems;
18. JSC Svetlana www.svetlanajsc.ru ;
19. Svetlana-growth;
20. JSC Angstrom;
21. JSC Angstrom-M;
22. JSC RTEC www.pkcc.ru ;
23. JSC Svyazdorinvest;
24. CJSC New technologies of light.

IP in the field of electronic products, electronic materials and equipment for their production

25. JSC Alagirsky plant resistance www.alzas.ru ;
26. JSC Discharge;
27. OJSC Foreign Trade Association Radioexport www.radioexport.ru ;
28. JSC Germany www.krasgermanium.com ;

29. JSC Grand Prix;
30. JSC Omega;
31. Scientific-Research Institute of electro-mechanical devices www.niiemp.ru ;
32. JSC Novosibirsk plant of radio components oxide www.oksid.com ;
33. Of General Directorate of Construction Electron ;
34. OJSC Don factory of radio components www.alund.ru ;
35. Plant Mars www.z-mars.ru ;
36. Plant of Semiconductor Devices;
37. JSC Institute of Precision design technology www.ittip.ru ;
38. JSC Design Bureau Icarus www.kbikar.ru ;
39. JSC Nalchik Plant of Semiconductor Devices www.oao-nzpp.ru ;
40. JSC Scientific-Research Institute of Machine Building oaoniim.ru ;
41. JSC Scientific-Production Association Bean ;
42. JSC Experimental Design Bureau MELZ www.okbmelz.ru ;
43. JSC Scientific Research and Design Institute of Technology electric carbonic wares www.niiei.ru ;
44. JSC Topaz;
45. JSC SPC Rigel www.npcrigel.ru ;
46. JSC Lithium Element lithium-element.ru ;
47. JSC NPP Instrumentation teplofizicheskogo OSTERM SPB www.osterm.ru .

IP in the field of microwave technology, semiconductor devices and materials

48. Scientific-Research Institute of microelectronic devices Progress mri-progress.ru ;
49. Scientific and Production Enterprise Istok www.istokmw.ru ;
50. Scientific and Production Enterprise Pulsar pulsarnpp.ru ;
51. JSC State Plant Pulsar www.gz-pulsar.ru ;
52. Scientific and Production Enterprise Almaz www.almaz-rpe.ru ;
53. Scientific and Production Enterprise East www.vostok.nsk.su ;
54. JSC Novosibirsk plant of semiconductor devices with OKB www.nzpp.ru ;
55. JSC Vladykinsky Mechanical Plant mosvmz.ru ;
56. JSC Scientific-Research Institute of Semiconductor Devices www.niipp.ru ;
57. Scientific and Production Enterprise Contact kontakt-saratov.fis.ru ;
58. JSC Scientific-Research Institute of Vacuum Technology them. SA Vekshinsky www.niivt.ru ;
59. Scientific-Research Institute Sycamore with the plant at the Institute;
60. Scientific-Research Institute of Electronic Materials;
61. Scientific and Production Enterprise Salute ;
62. Scientific and Production Enterprise Thorium www.toriy.ru ;
63. Scientific and Production Enterprise Cyclone-Test www.ciklon.ru ;
64. JSC Spetsmagnit www.s-magnet.ru ;
65. OJSC Foreign Trade Association Elektronintorg www.elektronintorg.mpi.ru ;
66. Plant Meteor www.meteor.su ;
67. Scientific and Production Enterprise Inject www.inject-laser.ru ;
68. JSC Saratovelektronproekt www.sarelpro.narod.ru ;

69. JSC Special Design Bureau of relay technique www.sktb-relay.ru ;
70. JSC Fryazino specialized construction management;
71. JSC Central Design Bureau Dayton ;
72. JSC Central Design Bureau for Special Radiomaterials ckbrm.ru ;
73. JSC Electron - optronics www.eloptronic.ru .
IP in the field of subsystems, systems and technical means of communication
74. OAO Omsk Research Institute of Instrument (JSC ONIIP) Omsk www.oniip.ru ;
75. JSC Production Association Irtysh (JSC OmPA Irtysh), Omsk www.irtysh.com.ru ;
76. OAO Kaluga plant telegraph equipment (JSC KZTA), Kaluga http://www.kzta.ru ;
77. JSC Barnaul Special Design Bureau East (JSC BSKB East), Barnaul, Altai Krai www.kbvostok.ru ;
78. Barnaul Radio Plant g. Barnaul, Altai Region http://brz-altai.ru/ ;
79. Plant of Radio, g. Ekaterinburg, Sverdlovsk region www.zra.ru ;
80. JSC Kovylkino Electromechanical Plant OJSC (KEMZ), the Kovylkino, Republic of Mordovia;
81. JSC Octave, Tula;
82. JSC Pskov factory equipment LD (JSC Pskov factory ADS) g. Pskov;
83. Omsk Instrument Red Banner of Labor Plant. N.G.Kozitskogo (JSC OPP them. Kozitskogo), Omsk;
84. Research Institute soliton OJSC (SRI Soliton), Ufa;
85. Research Institute Sapphire (OAO NII Sapphire), Makhachkala, Republic of Dagestan;
86. Research and Production Enterprise communication (SPE Communication), d.Yasnaya Polyana, Tula region;
87. Research and Production Enterprise Kant (JSC NPP Kant), Moscow www.nppkant.ru ;
88. Experimental Design Bureau Irtysh (JSC OKB Irtysh), Omsk,
89. Research Institute of Special Communication Systems Integral (JSC NIISS Integral), Moscow;
90. Foreign Trade Association Mashpriborintorg (JSC VO Mashpriborintorg), Moscow.

IP in the field of automation and information systems

91. Scientific-Technical Center of modern navigation technology Internavigatsiya , Moscow www.Internavigation.ru ;
92. Scientific-Research Institute of Industrial Television Raster , Veliky Novgorod www.rastr.natm.ru ;
93. JSC Scientific-Research Institute of Television, St. Petersburg http://niitv.ru/home/ ;
94. Scientific-Research Institute of software, St. Petersburg www.nii-ps.ru ;
95. JSC Scientific-Research Institute of Computer Technologies, Kirov www.niisvt.ru ;
96. JSC Informakustika, St. Petersburg www.forso.ru ;
97. JSC Scientific and Technical Center High-speed transmission systems Supertel Dulce , St. Petersburg www.supertel-dals.ru ;
98. JSC Novosibirsk Institute of Software Systems, Novosibirsk www.nips.ru ;

99. Of Order of Honor Open Joint Stock Company Telemekhanika , Nalchik http:// tmkbr.ru ;
100. JSC Research Computing Center Contact , Mytischi, Moscow region www.vc-kontakt.ru ;
101. JSC Institute for Radio Broadcasting Reception and Acoustics named after AS Popov , St. Petersburg;
102. JSC Novosibirsk State Design Institute, Novosibirsk http://ngpi.ru/ ;
103. JSC Research Center Crystal , Mytischi, Moscow region. www.skbvt.nm.ru ;
104. JSC Special Design Bureau of computer technology, Pskov,
105. JSC Special Design Office system software, Voronezh www.vsktb.ru ;
106. JSC Solnechnogorskiy Instrument Plant, Solnechnogorsk, Moscow region www.oao-spz.ru ;
107. JSC Special Design Bureau of controls, Tver www.spkbsu.ru ;
108. JSC Firm computer kit , Moscow;
109. JSC Kuznetsk factory radios Kuznetsk, Penza. http://kzrp.ru/ ;
110. JSC Design Bureau semiconductor engineering, Moscow http://kbpm.ru/ ;
111. JSC Scientific Research and Experimental Center for Intelligent Technologies Petrokometa , St. Petersburg;
112. OAO Tomsk Research Institute Project , Tomsk,
113. JSC Radiozavod Penza www.penza-radiozavod.ru

Список дочерних и зависимых обществ ОАО Российская электроника, а также предприятий, функции управления которыми, в соответствии с решениями Государственной корпорации Ростехнологии переданы ОАО Российская электроника

Дочерние и зависимые общества ОАО Росэлектроника
1. ОАО Научно-исследовательский институт Гириконд www.giricond.ru;
2. ОАО Научно-исследовательский институт газоразрядных приборов Плазма www.plasmalabs.ru;
3. ОАО Научно-исследовательский институт материалов электронной техники;
4. ОАО Рязанский завод металлокерамических приборов www.rmcip.ru/rus/ indexrus.html ;
5. ОАО Российский научно-исследовательский институт Электронстандарт www.elstandart.spb.ru;
6. ОАО Научно-исследовательский институт Феррит-Домен www.ferrite-domen.com;
7. ОАО Центральный научно-исследовательский институт экономики, систем управления и информации Электроника www.instel.ru;
8. ОАО Центральный научно-исследовательский институт измерительной аппаратуры www.cime.ru;
9. ЗАО Торговый дом РОСЭЛ;
10. ОАО Центральный научно-исследовательский институт Электрон www.electron.spb.ru;
11. ОАО Центральный научно-исследовательский институт Циклон www.cyclone-jsc.ru;

12. ОАО Нижегородский институт технологии и организации производства;
13. ОАО Оптрон www.optron.ru;
14. ОАО Мосэлектронпроект www.mosep.ru;
15. ОАО Логика www.logica.ru;
16. ОАО Особое конструкторское бюро Искра www.okbiskra.ru;
17. ОАО РЭ комплексные системы;
18. ОАО Светлана www.svetlanajsc.ru;
19. ЗАО Светлана-Рост;
20. ОАО Ангстрем;
21. ОАО Ангстрем-М;
22. ЗАО РКСС www.pkcc.ru;
23. ОАО Связьдоринвест;
24. ЗАО Новые технологии света.

ИС в области изделий электронной техники, электронных материалов и оборудования для их изготовления

25. ОАО Алагирский завод сопротивлений www.alzas.ru;
26. ОАО Разряд;
27. ОАО Внешнеторговое объединение Радиоэкспорт www.radioexport.ru;
28. ОАО Германий www.krasgermanium.com;
29. ОАО Гран;
30. ОАО Омега;
31. ОАО Научно-исследовательский институт электронно-механических приборов www.niiemp.ru;
32. ОАО Новосибирский завод радиодеталей Оксид www.oksid.com;
33. ОАО Генеральная дирекция строительства Электрон;
34. ОАО Донской завод радиодеталей www.alund.ru;
35. ОАО Завод Марс www.z-mars.ru;
36. ОАО Завод полупроводниковых приборов;
37. ОАО Институт точной технологии проектирования www.ittip.ru;
38. ОАО Конструкторское бюро Икар www.kbikar.ru;
39. ОАО Нальчикский завод полупроводниковых приборов www.oao-nzpp.ru;
40. ОАО Научно-исследовательский институт машиностроения oaoniim.ru;
41. ОАО Научно-производственное объединение Бином;
42. ОАО Опытно-конструкторское бюро МЭЛЗ www.okbmelz.ru;
43. ОАО Научно-исследовательский и проектно-технологический институт электроугольных изделий www.niiei.ru;
44. ОАО Топаз;
45. ОАО НПЦ Ригель www.npcrigel.ru ;
46. ОАО Литий-Элемент lithium-element.ru ;
47. ОАО НПП теплофизического приборостроения ОСТЕРМ СПБ www.osterm.ru .

ИС в области СВЧ-техники, полупроводниковых приборов и материалов

48. ОАО Научно-исследовательский институт микроэлектронной аппаратуры Прогресс mri-progress.ru;
49. ОАО Научно-производственное предприятие Исток www.istokmw.ru ;
50. ОАО Научно-производственное предприятие Пульсар pulsarnpp.ru;
51. ОАО Государственный завод Пульсар www.gz-pulsar.ru;
52. ОАО Научно-производственное предприятие Алмаз www.almaz-rpe.ru;
53. ОАО Научно-производственное предприятие Восток www.vostok.nsk.su;
54. ОАО Новосибирский завод полупроводниковых приборов с ОКБ www.nzpp.ru;
55. ОАО Владыкинский механический завод mosvmz.ru;
56. ОАО Научно-исследовательский институт полупроводниковых приборов www.niipp.ru;
57. ОАО Научно-производственное предприятие Контакт kontakt-saratov.fis.ru;
58. ОАО Научно-исследовательский институт вакуумной техники им. С.А. Векшинского www.niivt.ru;
59. ОАО Научно-исследовательский институт „Платан“ с заводом при НИИ;
60. ОАО Научно-исследовательский институт электронных материалов;
61. ОАО Научно-производственное предприятие Салют;
62. ОАО Научно-производственное предприятие Торий www.toriy.ru;
63. ОАО Научно-производственное предприятие Циклон-Тест www.ciklon.ru;
64. ОАО Спецмагнит www.s-magnet.ru;
65. ОАО Внешнеторговое объединение Электронинторг www.elektronintorg.mpi.ru;
66. ОАО Завод Метеор www.meteor.su;
67. ОАО Научно-производственное предприятие Инжект www.inject-laser.ru;
68. ОАО Саратовэлектронпроект www.sarelpro.narod.ru;
69. ОАО Специальное конструкторско-технологическое бюро по релейной технике www.sktb-relay.ru;
70. ОАО Фрязинское специализированное строительно-монтажное управление;
71. ОАО Центральное конструкторское бюро Дейтон;
72. ОАО Центральное конструкторское бюро специальных радиоматериалов ckbrm.ru;
73. ОАО Электрон — Оптроник www.eloptronic.ru.
ИС в области подсистем, комплексов и технических средств связи
74. ОАО Омский научно-исследовательский институт приборостроения (ОАО ОНИИП) г. Омск www.oniip.ru;
75. ОАО Производственное объединение Иртыш (ОАО ОмПО Иртыш), г. Омск www.irtysh.com.ru;
76. ОАО Калужский завод телеграфной аппаратуры (ОАО КЗТА), г. Калуга http:// www.kzta.ru;
77. ОАО Барнаульское специальное конструкторское бюро Восток (ОАО БСКБ Восток), г. Барнаул Алтайского края www.kbvostok.ru;
78. ОАО Барнаульский радиозавод,г. Барнаул Алтайского края http://brz-altai.ru/;
79. ОАО Завод радиоаппаратуры,г. Екатеринбург Свердловской обл www.zra.ru;
80. ОАО Ковылкинский электромеханический завод (ОАО КЭМЗ), г. Ковылкино, Республика Мордовия ;
81. ОАО Октава, г. Тула ;

82. ОАО Псковский завод аппаратуры дальней связи (ОАО Псковский завод АДС)г. Псков ;
83. Омский приборостроительный ордена Трудового Красного Знамени завод им. Н.Г.Козицкого (ОАО ОПЗ им. Козицкого), г.Омск ;
84. Научно-исследовательский институт Солитон (ОАО НИИ Солитон), г. Уфа;
85. Научно-исследовательский институт Сапфир (ОАО НИИ Сапфир), г. Махачкала, Республика Дагестан ;
86. Научно-производственное предприятие Связь (ОАО НПП Связь), д.Ясная Поляна, Тульская область ;
87. Научно-производственное предприятие Кант (ОАО НПП Кант), г.Москва www.nppkant.ru;
88. Опытное конструкторское Бюро Иртыш (ОАО ОКБ Иртыш), г. Омск;
89. Научно-исследовательский институт специальных систем связи Интеграл (ОАО НИИСС Интеграл), г. Москва;
90. Внешнеэкономическое объединение Машприборинторг (ОАО ВО Машприборинторг), г. Москва.

ИС в области автоматизированных и информационных систем

91. ОАО Научно-технический центр современных навигационных технологий Интернавигация, г. Москва www.Internavigation.ru;
92. ОАО Научно-исследовательский институт промышленного телевидения Растр, г. Великий Новгород www.rastr.natm.ru;
93. ОАО Научно-исследовательский институт телевидения, г. Санкт-Петербург http://niitv.ru/home/;
94. ОАО Научно-исследовательский институт программных средств, г. Санкт-Петербург www.nii-ps.ru;
95. ОАО Научно-исследовательский институт средств вычислительной техники, г. Киров www.niisvt.ru;
96. ОАО Информакустика, г. Санкт-Петербург www.forso.ru;
97. ОАО Научно-технический центр высокоскоростных систем передачи Супертел ДАЛС, г. Санкт-Петербург www.supertel-dals.ru ;
98. ОАО Новосибирский институт программных систем, г. Новосибирск www.nips.ru;
99. ОАО Ордена Почета открытое акционерное общество Телемеханика, г. Нальчик http://tmkbr.ru;
100. ОАО Научно-исследовательский информационный вычислительный центр Контакт, г. Мытищи, Московская область www.vc-kontakt.ru;
101. ОАО Институт радиовещательного приема и акустики имени А.С. Попова, г. Санкт-Петербург;
102. ОАО Новосибирский государственный проектный институт, г. Новосибирск http://ngpi.ru/;
103. ОАО Научно-исследовательский центр Кристалл, г. Мытищи, Московская обл. www.skbvt.nm.ru;
104. ОАО Специальное конструкторское бюро вычислительной техники, г. Псков;

105. ОАО Специальное конструкторско-технологическое бюро системных программных средств, г. Воронеж www.vsktb.ru;
106. ОАО Солнечногорский приборный завод, г. Солнечногорск, Московская область www.oao-spz.ru;
107. ОАО Специальное проектно-конструкторское бюро средств управления, г. Тверь www.spkbsu.ru;
108. ОАО Фирма ЭВМ комплект, г. Москва;
109. ОАО Кузнецкий завод радиоприборов, г. Кузнецк, Пензенская обл. http://kzrp.ru/;
110. ОАО Конструкторское бюро полупроводникового машиностроения, г. Москва http://kbpm.ru/;
111. ОАО Научно-исследовательский и опытно-экспериментальный центр интеллектуальных технологий Петрокомета, г. Санкт-Петербург;
112. ОАО Томский научно-исследовательский институт Проект, г. Томск;
113. ОАО Радиозавод, г. Пенза www.penza-radiozavod.ru.

Appendix C
JSC CRI Cyclone Background (www.cyclone-jsc.ru/about-company)


Russian President Vladimir Putin visited JSC "CRI" Cyclone "

About Company[9]
The Central Research Institute Cyclone was established in June 1961 within the framework of the Ministry of electronic industry of the USSR. Today it is a large knowledge-intensive research and manufacturing enterprise known for its developments and products in our country as well as abroad. The enterprise has the full development and manufacturing cycle of the wide range of electronic and optic, including thermal imaging devices and main accessories for their reproduction, being the single certified manufacturer and developer of the uncooled thermal imagers in the Russian Federation.

JSC CRI Cyclone is a part of JSC Ruselectronics – the largest industrial holding company which comprises of 123 enterprises of Electronic Industry. In turn, JSC Ruselectronics is a part of the State Corporation Rostec.

Nowadays, Cyclone fulfills the large scale works in the field of modifying and developing the unique production of uncooled and cooled thermal imaging core and cameras as well as developing and manufacturing the state-of-the-art microdisplays based on emitting organic LEDs and systems on their basis.

The priority areas in this field are as follows:

> Development of electro-optical devices of different application, including RSTA, TWS, gyro stabilized platforms and fire control systems on their basis;

---

[9] The information was posted on the company web site in English. The information, however, read like a computer translation of the Cyrillic page, a common practice on Russian web sites.

Production of multispectral thermal imaging systems based on QWIP, T2SL type detectors, and microbolometer arrays and other detectors;
Production of coaxial 2-FOV TV-thermal imaging systems;
Development and production of complex and multispectral electro-optical systems with eye-safe laser rangefinders;
Development and production of lens and their components with 0,2-14 μm spectral band and aspherical diffractive components, produced by means of diamond cutting;
Special applications – system technology, circuit technology, algorithm technology, programming, material technology and etc.;
Organic electro-optics and microelectronics based on electro- and photoactive organic and polymeric materials including none-organic nanomaterials;
Printed and hybrid electronics technology based on R2R continuous technologies;
Certification of foreign electronic components, used in the process of manufacturing of machine vision system as well;
Serial production of OLED microdisplays;
Organization of serial production of 160×120, 384×288, 640×480 and 1024×1024 microbolometers.

On the basis of developed photodetectors, low-light level television and thermal imaging modules the Institute produced a number of machine vision systems for multipurpose surveillance in a wide spectral range. The systems have high resolution and quality of television and thermal images.

Systems and devices are certified, specially marked and supplied to Ministry of Defense, FSB, Ministry of the Interior, RF Emergencies Ministry, other departments and commercial customers.

CYCLONE THERMAL IMAGERY SYSTEM ON AIRBORNE TROOP'S AK-74

Appendix D
Letter From Dimitry Rogozin, Chairmen of the Russian Federation Military Industrial Commission

Dmitry Rogozin's Letter of Support to VEB
(Translated from Russian)

To the Chairman of the State
Corporation Bank for Development
and Foreign Economic Affairs
(Vnesheconombank)
V.A. Dmitriev

Dear Vladimir Aleksandrovich!

As chairman of the Military-Industrial Commission of the Russian Federation Government, I would like to draw your attention to the critical situation in the field of technical equipment of the Russian Army. Today, there is a systemic backlog of Russia's defense industry's vision systems and preparedness for all-day warfare, which to date has reached a critical level. Preserving this trend will lead to a moral backlog of the Russian Army as a whole.

At present, the Russian Army only has a few hundred individual imagers and no sighting systems and machine vision systems with advanced performance. On the other hand, our potential enemy troops - NATO, are equipped with hundreds of thousands of thermal imaging sights, sighting and vision systems. Specifically, they are fully equipped with armored vehicles, air force, navy, anti-aircraft guns, border guards, special and intelligence units. Currently staffing moves to the level of individual fighters. A similar trend exists not only in other developed countries, but also in the armies of the second and third world countries.

On the one hand, the described situation occurred due to the embargo - a de facto ban on the sale of Russian basic critical technologies, and on the other, due to the adoption of a legislative ban on basic imported arms products. As a result, the military industrial complex, with latest developments written on paper, does not have the technical capability to implement them; and the Ministry of Defense is not authorized to put into service the required range of devices and systems for all classes of weapons and military equipment.

In this regard, one of the most important and promising areas of basic and critical industrial technology is the development and production of uncooled and cooled microbalometric based on Quantum Well Infrared Photodetector matrix receivers, which are the basis for further development and production of advanced vision systems, including thermal imagers, with the aim to ensure the independence of the Russian defense industry from foreign suppliers of components and finished products, as well as increase the efficiency of the Russian army as a whole.

At present, JSC CRI Cyclone - a leading developer and manufacturer of uncooled thermal imagers in Russia - is implementing the project Organization of serial production of cooled and uncooled photodetector devices, which will give Russia such critical components as organic microdisplay and cooled and uncooled photodetectors of various formats.

Creating a project on the basic level will ensure full independence of the Russian military-industrial complex on imports in the production of computer vision systems.

Production of the project is already in demand and important for the entire defense industry. Immediately upon seeing the working documents and prototypes of products, we will form the branch system of development. Based on that, not only vision systems will be created, but also new models of weapons in relation to the possibilities of components.

Thus, the products of the project will be incorporated into the final product - helicopters, armored vehicles, anti-aircraft, small arms, etc., which are still at the design stage. This will make use of its elemental base in the future and guarantee the uncontested demand.

The project covers one of the major strategic technological gaps in the defense capability and technological independence of the Russian Federation. Production of the project is in demand, and more than that, the military-industrial complex system is waiting to immediately incorporate it into the work at all stages.

With this in mind, I support the submitted project to the State Corporation Vnesheconombank of CRI Cyclone, an organization of serial production of cooled and uncooled photodetector devices, and believe the importance of the whole selected loan for its implementation.

Kind regards,
Chairman of the Military-Industrial Commission of Russia
D.O. Rogozin

Appendix E
LLC Cyclone-IR Business Registration

All legitimate Russian businesses are registered with state authorities and assigned a unique Russian tax identification number (ИНН). Basic registration documents are available on several Russian Internet web sites that provide business data.

http://www.k-agent.ru/?mod=obj&id=6991803

ООО ЦИКЛОН-ИК, Москва

Наименование	Общество с ограниченной ответственностью ФОТОЭЛЕКТРОННЫЕ ПРИБОРЫ
ИНН	7718946380
ОГРН	1137746807582
ОКПО	18248686
Адрес	107497, МОСКВА, шоссе ЩЕЛКОВСКОЕ, 77

Ltd. CYCLONE-IR, Moscow

Name	Limited Liability photoelectric devices
INN	7718946380
BIN	1137746807582
OKPO	18248686
Address	107497, Moscow, highway ShhELKOVSKOE, 77

http://sbis.ru/contragents/7718946380/771801001#msid=s1425767428181

Photoelectric Devices, Inc.
LIMITED LIABILITY photoelectric devices
Vladimir Busel Evnenevich CEO
Production of equipment for receiving, recording and playback of sound and image another 38 activities

INN	7718946380
PPC	771801001
BIN	1137746807582

Of Enterprise Effective 06/09/2013

Owners
CRI Cyclone 203 million p. 50%
STOCK COMPANY LIMITED LIABILITY REYFAST Investments Ltd. 203 million p. 50%

Appendix F
Rayfast Investments Ltd

ΚΥΠΡΙΑΚΗ ΔΗΜΟΚΡΑΤΙΑ
REPUBLIC OF CYPRUS

HE 316036

MINISTRY OF COMMERCE, INDUSTRY AND TOURISM
DEPARTMENT OF REGISTRAR OF
COMPANIES AND OFFICIAL RECEIVER
NICOSIA

11 February, 2013

CERTIFICATE

RAYFAST INVESTMENTS LTD

It is hereby certified that, in accordance with the records kept by this Department, the following are the Director and Secretary of the above Company:

Director	Country of Nationality
PANAGIOTA MICHAIL Parou, 8D KYANNA COURT, Flat/Office 8D Germasogeia, 4045, Limassol, Cyprus	Cyprus

Secretary	Country of Nationality
TEAM NOMINEES LIMITED Omirou, 20 Agios Nikolaos, 3095, Limassol, Cyprus	

(Sgd.) R. EFSTATHIANIOU
For Registrar of Companies

ΤΟ ΔΙΑΒΑΤΗΡΙΟ ΑΥΤΟ ΙΣΧΥΕΙ
ΓΙΑ ΟΛΕΣ ΤΙΣ ΧΩΡΕΣ
BU PASAPORT TÜM ÜLKELER
İÇİN GEÇERLİDİR
THIS PASSPORT IS VALID
FOR ALL COUNTRIES

Εκδίδουσα Αρχή / Pasaportu veren makam / Issuing Authority (9)

ΕΠΑΡΧΙΑΚΗ ΔΙΟΙΚΗΣΗ
ΛΕΜΕΣΟΥ
DISTRICT ADMINISTRATION
LIMASSOL

Υπογραφή κατόχου / Pasaport sahibinin imzası / Signature of bearer (10)

ΚΥΠΡΙΑΚΗ ΔΗΜΟΚΡΑΤΙΑ – KIBRIS CUMHURİYETİ – REPUBLIC OF CYPRUS

ΔΙΑΒΑΤΗΡΙΟ
PASAPORT / PASSPORT

Είδος / Tip / Type: P
Κωδικός / Kodu / Code: CYP
Αρ. διαβατηρίου / Pasaport No. / Passport No.: E304424

Επώνυμο / Soyadı / Surname (1)
ΜΙΧΑΗΛ
MICHAIL

Ονόματα / Adı / Given names (2)
ΠΑΝΑΓΙΩΤΑ
PANAGIOTA

Ιθαγένεια / Tabiiyet / Nationality (3)
ΚΥΠΡΙΑΚΗ
CYPRIOT

Τόπος γέννησης / Doğum yeri / Place of Birth (4)
ΛΕΜΕΣΟΣ
LEMESOS

Φύλο / Cinsiyeti / Sex (5)
ΘΗΛΥ FEMALE

Ημερ. έκδοσης / Verilis / Issued on (6)
19/03/2008

Ημερ. γέννησης / Doğum tarihi / Date of Birth (7)
11/08/1986

Λήγει την / Müddeti / Expires on (8)
19/03/2018

Εκδίδουσα Αρχή / Pasaportu veren makam / Issuing Authority (9)
ΕΠΑΡΧΟΣ ΛΕΜΕΣΟΥ
LEMESOS DISTRICT OFFICER

P<CYPMICHAIL<<PANAGIOTA<<<<<<<<<<<<<<<<<<<<<<
E304424<<7CYP8608114F1803194<<<<<<<<<<<<<<08

ΕΠΑΡΧΟΣ ΛΕΜΕΣΟΥ
DISTRICT OFFICER LIMASSOL
LEYMOSUN KAZA AMİRİ

Appendix G
Rostec Management Dachas

(http://daching.alburov.ru)

Chemezov

Director General of the State Corporation Rostec

Plot area of 6.3 hectares.

Vladimir Artjakov

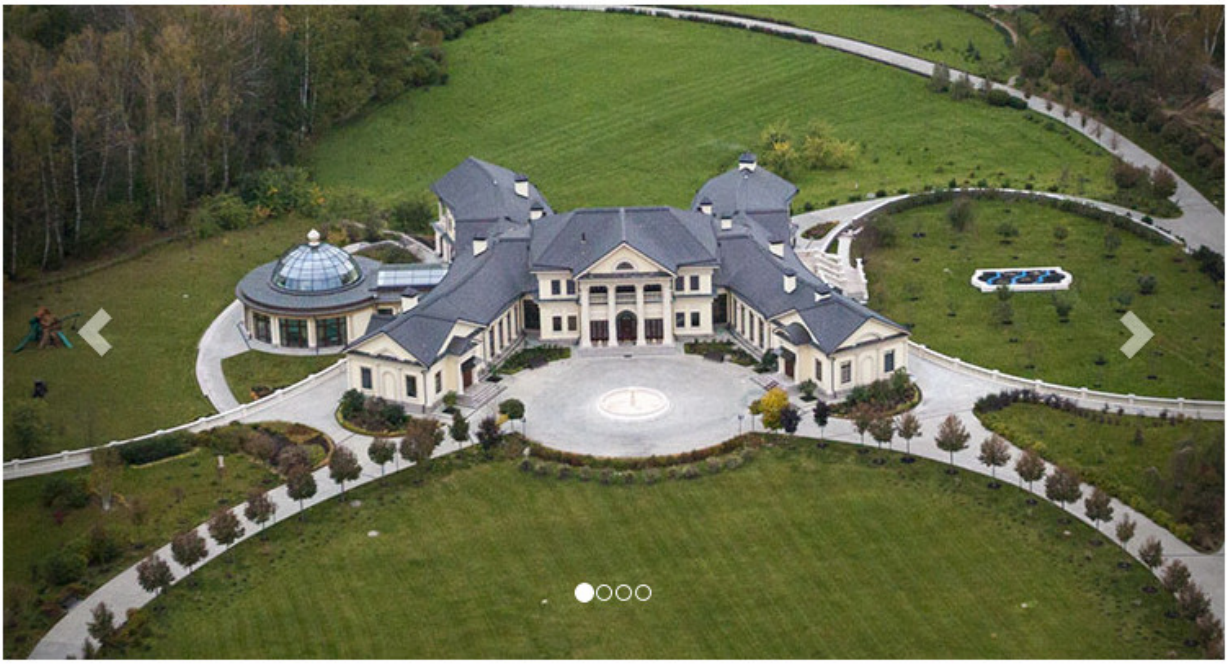
Deputy Director General, SC Rostec

Plot area of 5.1 hectares.

Igor Zavyalov

Deputy Director General, SC Rostec

Plot area of 4.3 hectares.



Appendix H
Federal Security Service (FSB) Fifth Directorate (Service)

The Fifth Directorate's acknowledged role is preparing analytic reports for Russia's President and managing FSB relations with foreign intelligence services. However, Russian and foreign press articles allege that the Fifth Directorate's Department of

Operational Information conducts intelligence gathering and influence operations in the "near abroad.[10]"

Russian press, however, shows Fifth Directorate leaders attending memorial services for Fifth Directorate personnel killed in "counter-terrorist" operations indicating that the directorate's role includes more aggressive options. Ukrainian press shows the Ukrainians seeking to interview Colonel-General Beseda regarding FSB involvement in violent attempts to suppress the Maydan movement[11].

Operational Information and International Relations Directorate (Fifth Directorate) formerly the Department of analysis, forecasting and strategic planning FSB
Head Colonel-General Sergey Orestovich Beseda[12]
Structure:

Department of Operational Information (DPI)
Information and Research Department (AIO)
Office of Strategic Planning
Department of Public Information ooi@fsb.ru
Department of International Cooperation
Group of Informing (SOI)

---

[10] The near abroad is Russia's term for those neighboring countries that, though now independent, formerly comprised the Union of Soviet Socialist Republics (USSR). Russia intelligence activities in the near abroad are conducted by the FSB, the Russian internal security service. Russian intelligence activities beyond the near abroad are conducted by the Foreign Intelligence Service (SVR).

[11] Moscow Yezhednevnyy Zhurnal 13 Apr 14

[12] Colonel-General Sergey Beseda is on both the US and EU list of individuals subject to sanctions for Ukrainian related activity.

Appendix I
LLC Technology Company Flybridge Business Registration

http://www.prima-inform.ru/cat/cc/tk-flay-bridzh-1105047006954-5008054416

Наименование
Полное: ОБЩЕСТВО С ОГРАНИЧЕННОЙ ОТВЕТСТВЕННОСТЬЮ ТЕХНОЛОГИЧЕСКАЯ КОМПАНИЯ ФЛАЙ БРИДЖ
Сокращенное: ООО ТК ФЛАЙ БРИДЖ

Коды
ОГРН: 1105047006954
ИНН: 5008054416
КПП: 500801001
Код налогового органа: 5008 (от 17.06.2010)
Рег. номер ФСС: 502620464950261 (от 08.07.2010)
Рег. номер ФОМС: 464161000346230 (от 21.06.2010)

Руководство
Генеральный директор: Ермаков Максим Юрьевич
Учредителей: 2

Контактные данные
Юридический адрес: Московская обл, Долгопрудный г, Дирижабельная ул, 15А

Name
Full: LIMITED LIABILITY COMPANY TECHNOLOGY FLY BRIDGE
Short: OOO TK FLY BRIDGE

Codes
BIN: 1105047006954
VAT number: 5008054416
Transmission: 500801001
Code of the tax authority: 5008 (from 17.06.2010)
Reg. FSS number: 502620464950261 (from 08.07.2010)
Reg. HIF number: 464161000346230 (from 21.06.2010)

Leadership
CEO: Ermakov Maxim

Founders: 2

Contact details
Legal address: Moscow region, Dolgoprudny g Dirizhabelnaya Street, 15A

OOO TECHNOLOGY COMPANY FLYBRIDGE REGISTERED ADDRESS (GOOGLE EARTH)