

TO THE WILDS  
VIGOR OF EXPLORATION  
AND PERSEVERANCE

一带一路·地质宝藏 | ONE BELT AND ONE ROAD  
GEOLOGICAL TREASURES

# 野外·探索精神的执着



于 湛 郭友钊 王 浦 冯治汉 吴燕辛 王剑昆 王文祥 著  
杨贝贝 姚舜禹 译

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电子邮箱: [gphdzb@sina.com](mailto:gphdzb@sina.com)

天猫旗舰店: <http://zgddbs.tmall.com/>

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**致敬中国地质调查机构成立 100 周年**

撰文 国土资源航空物探遥感中心 王浦

我国西部地区多高山丘陵，地势陡峻，切割剧烈，野外地面调查工作难度很大。实践证明，在进行地质调查工作中采用航空磁测、航空遥感等方法非常有效，能够快速准确地发现一批矿致异常，为矿产勘查工作提供后备选区支撑。航遥中心 909 队承担 1:5 万航磁调查任务，要在祁连山北麓的敦煌至阿克塞一带飞行，飞行工作量 12 万测线千米，计划飞两年。2015 年 6 月开始，项目组就进场调试仪器，8 月进入正式测量飞行阶段。

By Wang Pu, China Aero Geophysical Survey & Remote Sensing Center for Land and Resources

Featuring numerous mountains and hills, steep landforms, and deep-cut valleys, West China is a difficult region for outdoor ground surveys. Geophysical methods, such as aeromagnetic surveys and aerial remote sensing, have been proven to be useful in geological surveying. These methods make it possible to rapidly and accurately pinpoint a batch of mineral anomalies and provide backup area options for mineral surveys. Team 909 of the Aerial Remote Center is responsible for the 1:50,000 aeromagnetic surveys conducted over two years and covering 120,000 from Dunhuang at the north foot of Mt. Qilian to Aksay. In June 2015, the project team will start to commission the instruments on site, and the official survey flights begin in August.



2015\8.26 7:11



围着“小松鼠”直升机，各专业小组有序地展开了各自的作业。仪器组在直升机的左下方安装上了长长的管状物——那可不是导弹，是航遥中心专家们研制的磁探头，是开展航磁工作最重要的装备。

Centered on the Squirrel helicopter, all the teams perform their tasks in an orderly manner. The instrument team installs a long tube-like object on the lower left side of the helicopter. It's not a missile, but a magnetic probe researched and developed by engineers from the Aerial Remote Sensing Center and is our most important tool for aeromagnetic measurement.



2015\8.28 6:19

磁探头固定完毕，仪器组专家接上磁力仪进行磁场测量。磁探头与飞机的耦合，或许只有毫米的误差，但都可能影响测量的效果，这时就需要重新进行“补偿”调试，科学观测是决不允许“失之毫厘，谬以千里”的。调试过程需要耐心、细心与专注，工程师们埋头工作，一般留意不到东方已露鱼肚白。

As the magnetic probe is fixed, the instrument team connects the magnetometer to measure the magnetic field. Even a millimeter of error in the coupling between the magnetic probe and the aircraft will impact the measurement and result in the need to re-perform the compensation commissioning. No error however tiny is allowed in scientific measurement. When conducting commissioning, the engineer is always patient, careful, and so concentrated that he does not even notice sunrise.



2015\8.28 6:38



设备调试、航空加油完毕之后，飞行工程师开始对飞机的机械系统、电子系统、通信系统等全面的性能检查，对飞机的各部件进行养护处理。此时，机组人员已在飞机旁待命，做好了随时起飞的准备。每一天，不管能不能起飞作业，安全检查、设备检测和清洁保养都是必修课。

Upon the completion of equipment commissioning and aircraft fueling, the aerial engineers start to perform an all-round inspection of the mechanical, electronic, and communication systems, as well as servicing all parts of the aircraft. The air crew is all set, standing by, and ready for takeoff. Whether the aircraft takes off or not, the crew must perform safety and equipment checks, as well as cleaning and servicing.



2015\8.28 6:43

鱼肚白逐渐变成了东方红。今天很幸运，机场的塔台指示飞机可升空作业！西班牙籍的机长立即钻进了“小松鼠”的机舱，机组人员全部就位，螺旋桨转动了起来，但旋转的速度并不快，说明发动机正在预热。此时，舱门还没有关闭，仪器组的专家与机组人员还在交流工作要点。

As the sky turns bright in the east, communication from the control tower indicates that the aircraft can take off today. As soon as the Spanish captain enters the Squirrel, all crew get into position. The propellers start to rotate slowly, indicating that the motor is preheating. The cabin door is still open as the instrument team members communicate information regarding the fieldwork site with the flight crew.



2015\8.28 6:48



迎着曙光，机长关闭舱门，地面人员全部撤离，随着“呼——”的声响，螺旋桨加速旋转，“小松鼠”迎着初升的朝阳腾空而起，端着长长的磁探头，呼啸着飞向天际，消失在漫天红霞中。

Against the dawn flush, the captain shuts the cabin door, and all staff on the ground evacuate. Bang! The propeller rotation speeds up and the Squirrel, carrying the long magnetic probe, rises to the sun, screams in the sky and disappears into the morning glow.