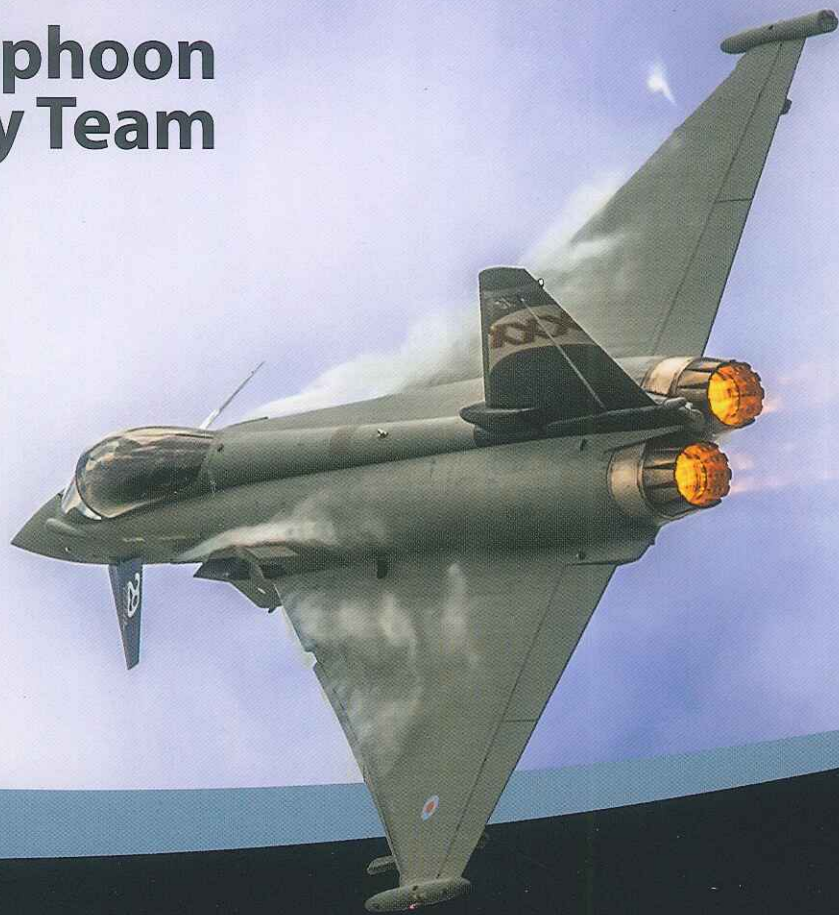


# RAF Typhoon Display Team 2014



 **ROYAL  
AIR FORCE  
TYPHOON  
DISPLAY TEAM**

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# Foreword

Typhoon Force Commander  
Air Vice Marshal Gary Waterfall



As the Typhoon Force Commander, I am delighted that you have the opportunity to watch one of the most modern and capable combat aircraft in the world put through its paces.

The Typhoon will be the mainstay of the Royal Air Force Fast Jet fleet for many years to come, for now alongside the Tornado GR4, and soon the F-35 Lightning II. Ever since the advent of military aviation, control of the air has been essential for all other military operations. Today, Quick Reaction Alert Typhoons are at immediate readiness around the clock to protect UK airspace and the Typhoon Force is able to project combat air power rapidly wherever it is needed to safeguard the UK's security. But the Typhoon is more than just an exceptional Air Superiority fighter. As operations over Libya in 2011 showed,

it is a Swing-role aircraft, able to deliver precision weaponry to campaign-winning effect in contested and challenging environments.

However, a great aircraft is nothing without people. The airmen and women of the Typhoon Wings at RAF Coningsby and RAF Leuchars - and later this year, at RAF Lossiemouth too with the move of the Leuchars Squadrons and the founding of Number 11 (Army Co-operation) Squadron as the fifth front line Squadron - are what make the Typhoon Force. Flight Lieutenant Noel Rees represents their professionalism, dedication and service. The Royal Air Force has a proud tradition of excellence developed in the 96 years since our foundation as the World's first independent Air Service. We take great pride in following those who served before us in providing continued leadership and expertise for the nation in the Air Environment.



# Introduction

Station Commander  
Group Captain Johnny Stringer



Welcome to the 2014 Typhoon Display, flown by 29(R) Squadron from Royal Air Force Coningsby and supported by personnel from across the Coningsby Typhoon Wing.

I am delighted that we can share with you again this year a little of what this superb aircraft is capable. We are very proud of the Typhoon and very fortunate at RAF Coningsby to be able to operate and support it. I know that Flight Lieutenant Noel Rees will keep you entertained and enthralled as he puts the Typhoon through it's paces, from slow-speed to just under the speed of sound, and pulling up to 9g (or nine times his own body weight).


Whilst Noel is the public face of the display, what you might not see is that behind him is a team of professional, highly skilled and committed servicemen and women and their civilian colleagues. They work tirelessly throughout the year to keep him and his fellow pilots from the Coningsby Wing in the air and ready to deploy at a moment's notice anywhere in the world, in support of the nation and its interests.

For now, enjoy the show!



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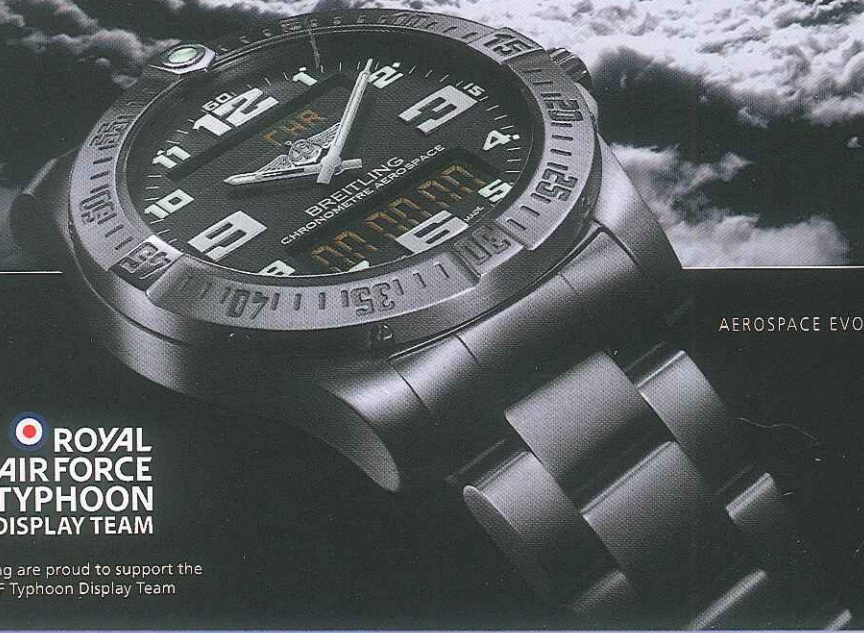




# The Pilot



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# Display Pilot 2014



## Flt Lt Noel Rees

Noel Rees was born in Southampton and grew up on the south coast in Hampshire. He was educated at Portsmouth Grammar School where he joined the Combined Cadet Force (CCF) RAF Section and was awarded Sixth Form and Flying Scholarships. Noel was awarded a bursary to study Aerospace Engineering at Bath University and joined Bristol University Air Squadron (BUAS) where he conducted his Elementary Flying Training (EFT). Noel joined the RAF in 2002 and after completing Initial Officer Training (IOT) he continued his pilot training on the Tucano and Hawk. On graduating from Advanced Fast Jet Training, Noel was sent to 56(R) Squadron at RAF Leuchars to fly the Tornado F3. On posting from the Operational Conversion Unit (OCU) he stayed at Leuchars and completed his first tour on 43(F) Squadron. In 2009 he was posted to 19(R) Squadron, RAF Valley where he became a Qualified Flying Instructor (QFI) conducting Tactical Weapons Training on the Hawk T1.

Noel was posted to the Typhoon Force in 2011 initially as an instructor in the Typhoon Training Facility (TTF). After completing the OCU he remained on 29(R) Squadron as a Typhoon QFI.

As an instructor on the OCU, Noel has trained many of the front line Typhoon pilots, is an Electronic Warfare Instructor (EWI) and contributes to RAF Coningsby's primary task of Quick Reaction Alert (QRA). During his time in the RAF, Noel has taken part in multiple overseas deployments and exercises to the South Atlantic, USA, Middle East and Europe including completing the Tactical Leadership Programme (TLP).

Noel lives in Lincolnshire with his wife Laura and they have one son. In his spare time he enjoys swimming, travelling with his family and walking with their dog Toby.



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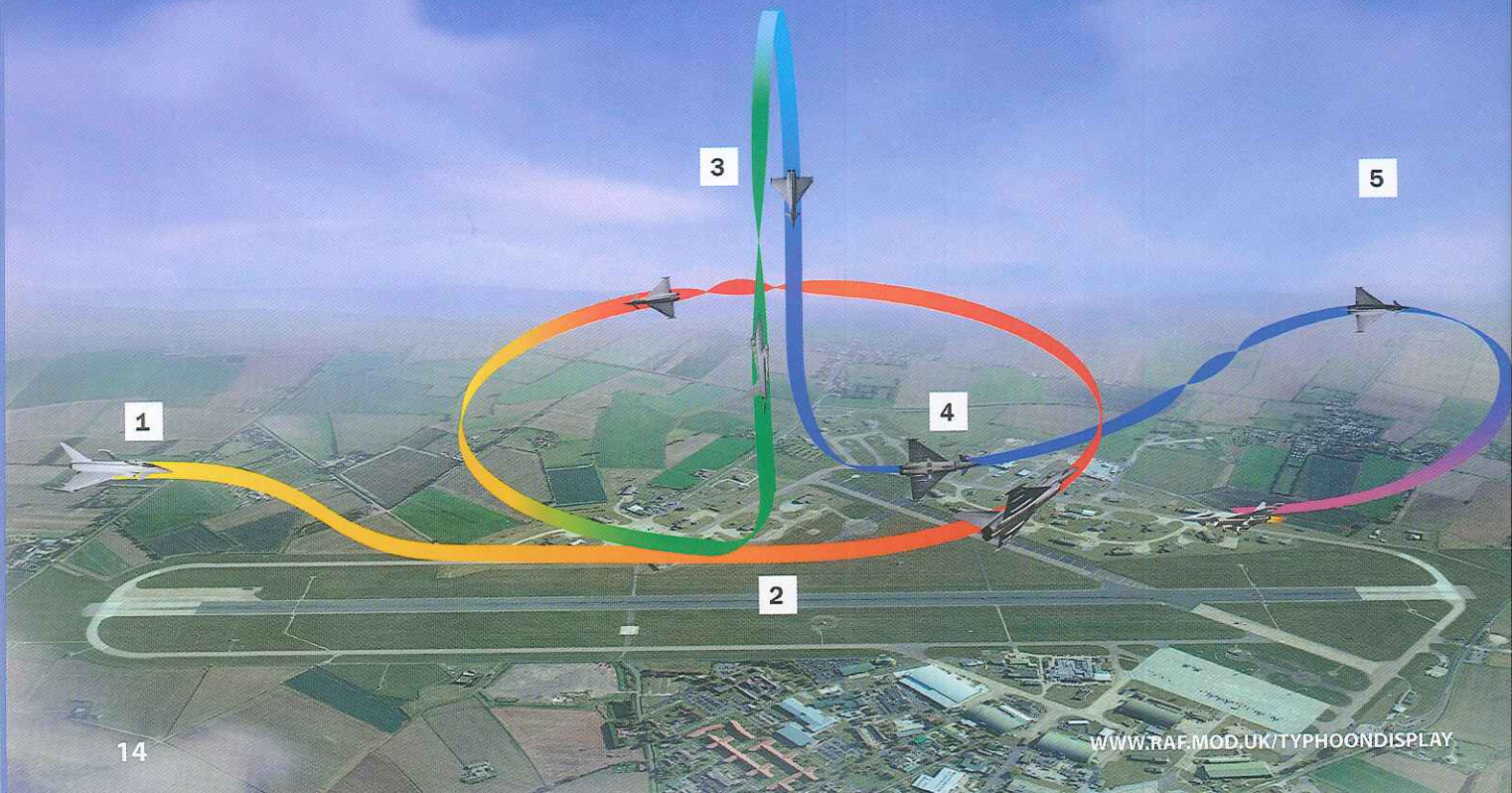


# The Display



The Typhoon arrives at high speed (450 knots) and at 100ft (1) before entering an Oblique Loop with an Aileron Roll at the apex (2). Flight Lieutenant Rees max performs the aircraft into the vertical for a ¼ Clover (3) before pointing

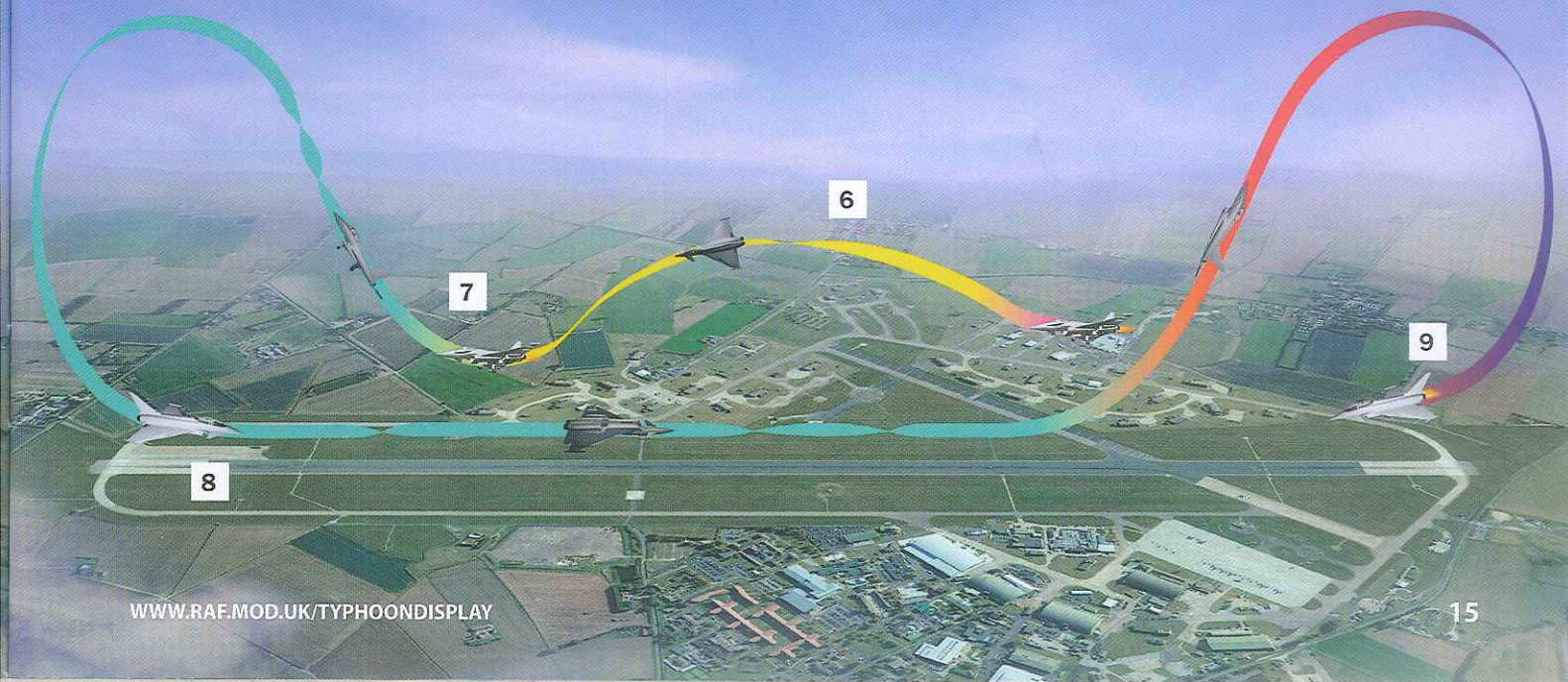
straight at the crowd, then skidding the aircraft away using the rudder (4). After an Aileron Roll heading away from the crowd, Noel enters a level turn, selects idle to decelerate and lowers the landing gear (5).





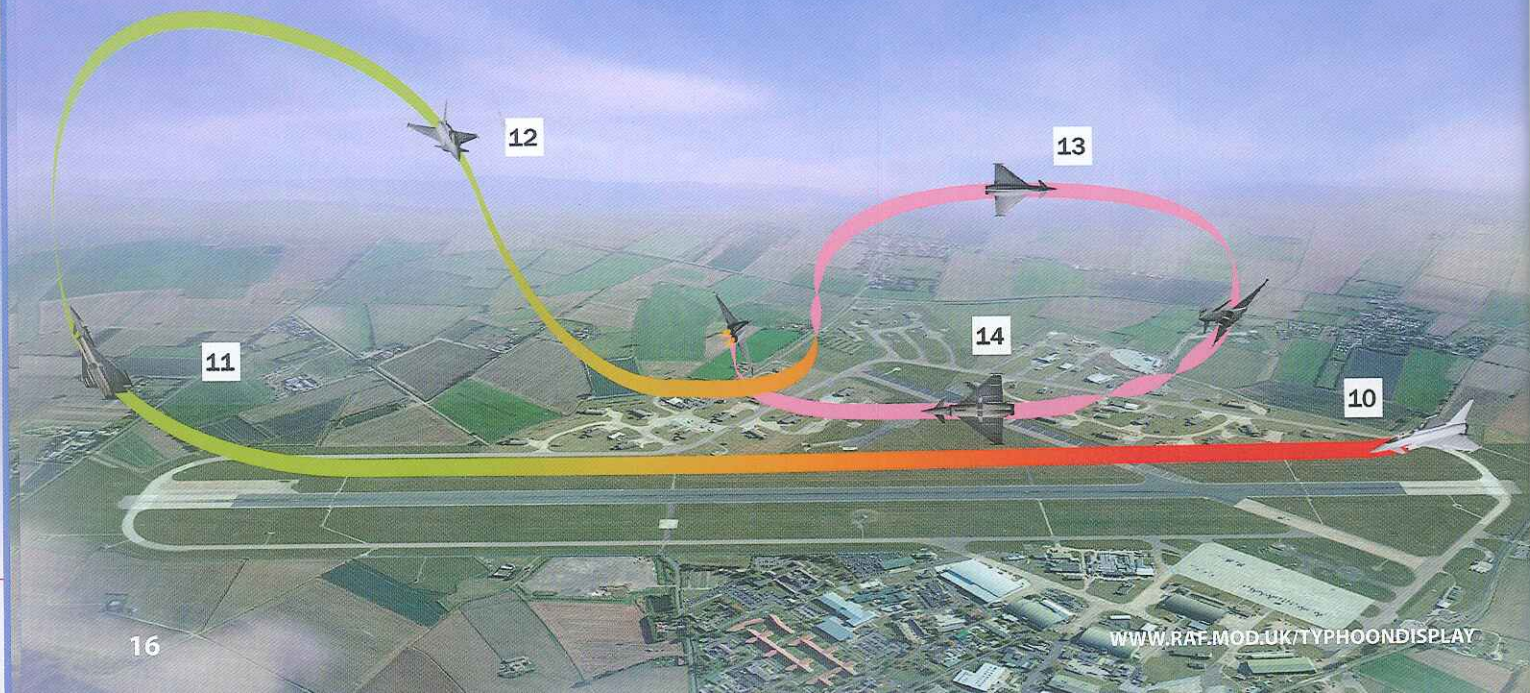
Re-selecting max re-heat, the aircraft is rolled towards the crowd for a 'Dirty' Barrel Roll (6) and then pitched up into a ½ Cuban (7), raising the gear in the climb. The Typhoon arrives along the display line at 500ft and rolls for the

inverted pass (8), aileron rolling at datum. At the end of the display line Noel pushes full front stick for a -3g inverted entry into a ½ Cuban (9).



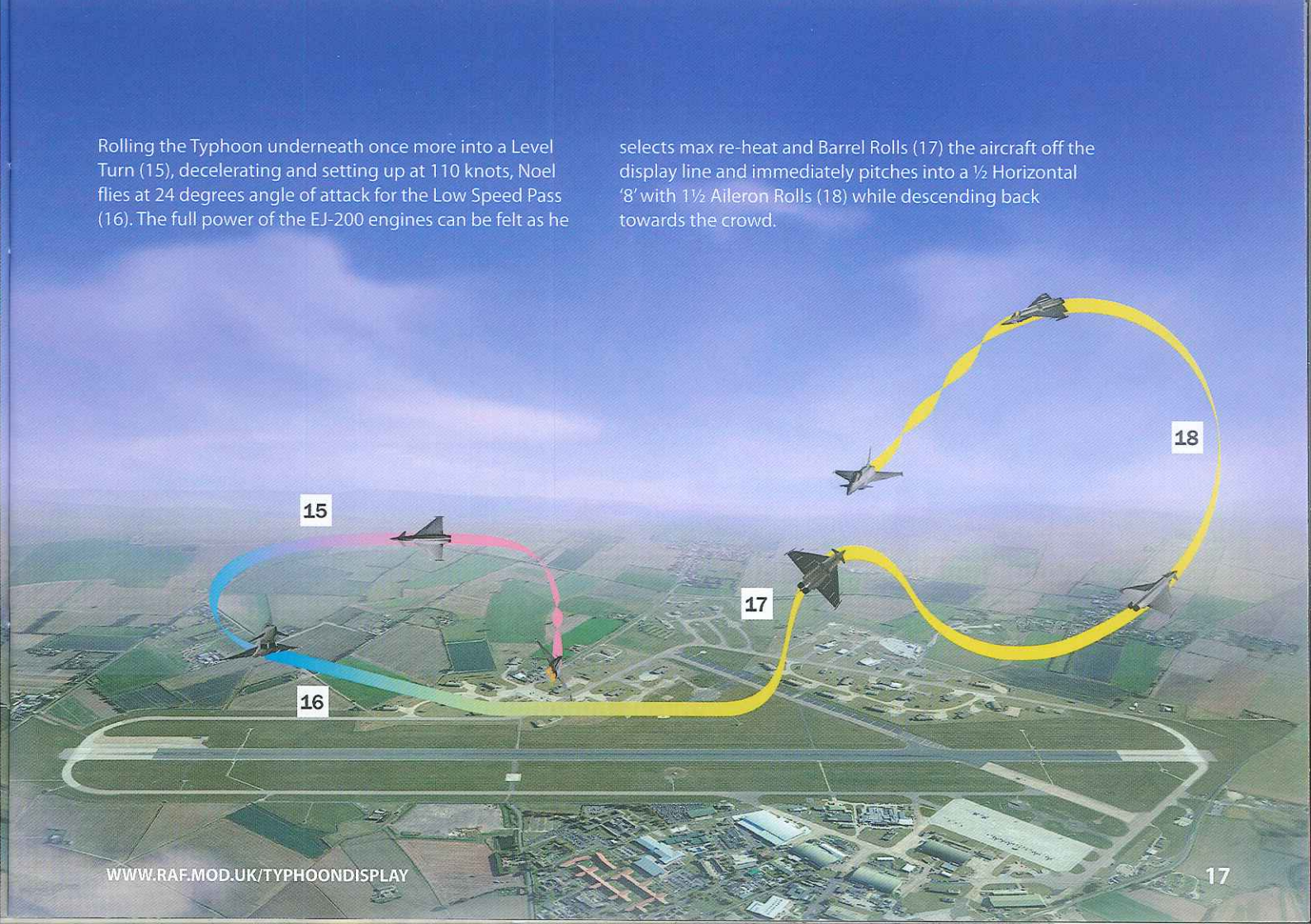
Descending from the ½ Cuban to 100ft the Typhoon accelerates to 600 knots for a High Speed Pass. Pitching up at 9g and rolling away from the crowd in a Wingover (11) climbing to 3500ft. The crowd will see a full view of the top surface of the Typhoon as Noel bunts

the aircraft to 50 degrees nose down (12). Selecting max re-heat then turning away, Flight Lieutenant Rees rolls the aircraft underneath into a level turn (13) in the opposite direction. He then points back at the crowd with an Aileron Roll (14) before turning back away once more.



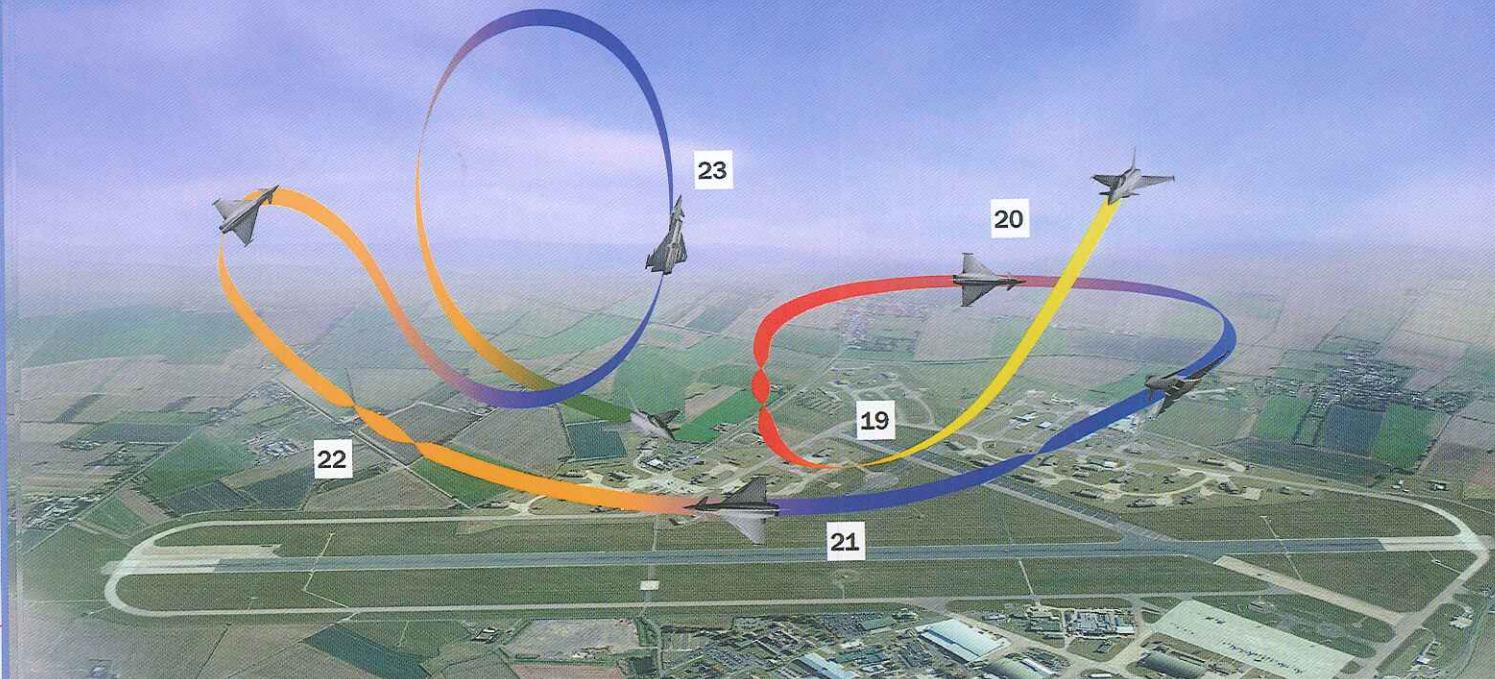
Rolling the Typhoon underneath once more into a Level Turn (15), decelerating and setting up at 110 knots, Noel flies at 24 degrees angle of attack for the Low Speed Pass (16). The full power of the EJ-200 engines can be felt as he

selects max re-heat and Barrel Rolls (17) the aircraft off the display line and immediately pitches into a ½ Horizontal '8' with 1½ Aileron Rolls (18) while descending back towards the crowd.



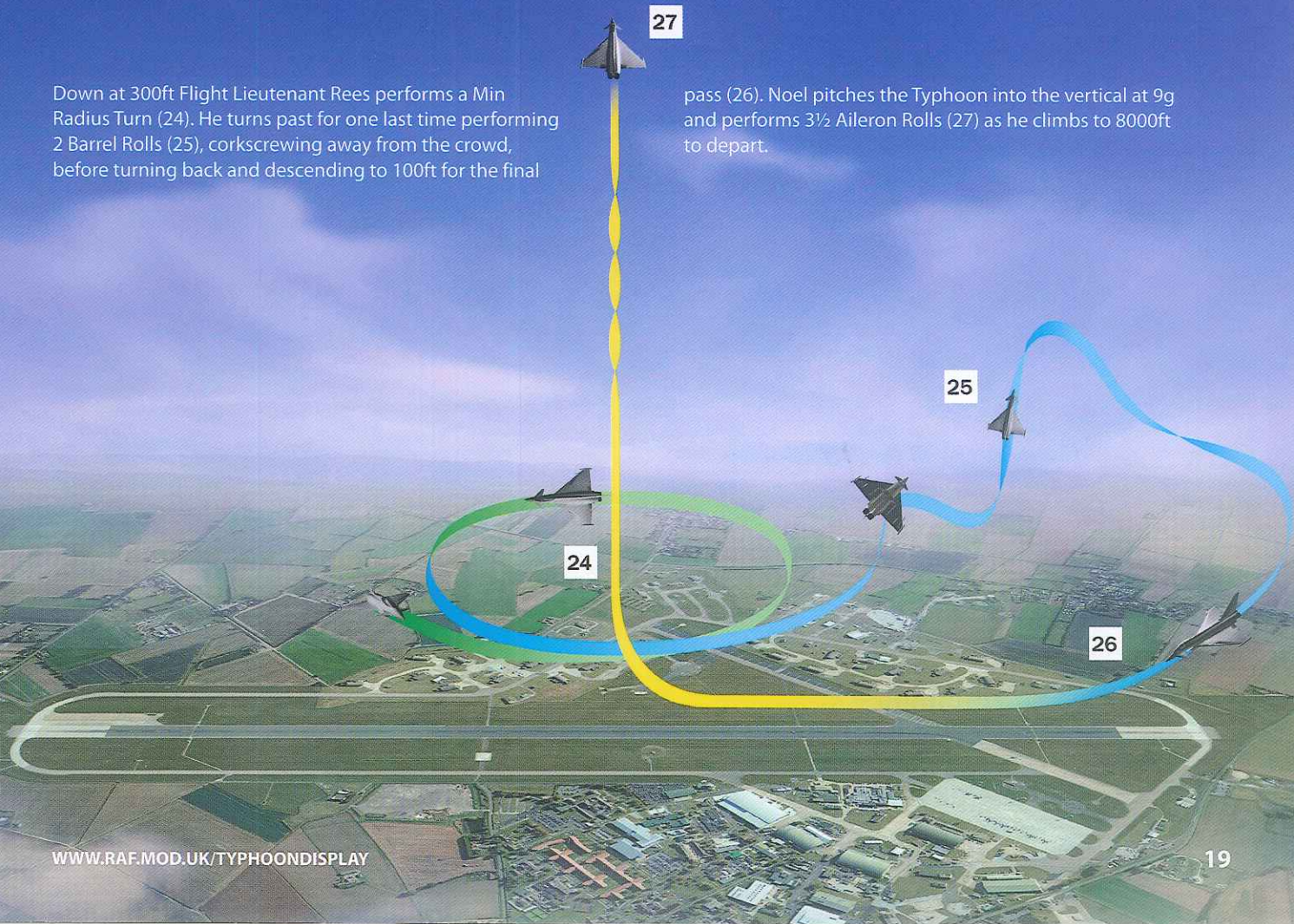
Turning away and performing a 360 degree Aileron Roll (19) into a Level Turn (20) before rolling inverted and pushing -3g for an Outside Turn (21). The Typhoon Slow Rolls initially winding up into a Rapid Roll (22) and

Wingover before pointing back towards the datum. Flight Lieutenant Rees pulls full back stick and the Typhoon pitches at 6g into a Loop (23) before descending to 300ft.



Down at 300ft Flight Lieutenant Rees performs a Min Radius Turn (24). He turns past for one last time performing 2 Barrel Rolls (25), corkscrewing away from the crowd, before turning back and descending to 100ft for the final

pass (26). Noel pitches the Typhoon into the vertical at 9g and performs 3½ Aileron Rolls (27) as he climbs to 8000ft to depart.





# The Team



# Display Team 2014



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“My aim when presenting the Royal Air Force Typhoon Display is not only to give you an appreciation of this aircraft’s outstanding capabilities, but also to highlight the professionalism, dedication and excellence of the RAF personnel who have volunteered to serve on the Display Team”

Flt Lt Noel Rees

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Displaying the Typhoon at over 30 venues across the UK and further afield wouldn't be possible without the Team's untiring support during the busy work-up period and throughout the season.

The Display Team comprises specialists in mechanical, avionics, weapons and computer systems to support and maintain the Typhoon aircraft flown at the air shows. We also rely on the expertise of air traffic controllers, aviation medicine professionals, security and transport personnel, and many other vital trades conducted by the RAF. All the team's day-to-day duties are in support of the Typhoon Force's primary role in providing immediate, round the clock, Quick Reaction Alert (QRA) in protection of UK airspace and many have supported, and continue to prepare for, operations worldwide. It has been a privilege to work with my colleagues to produce what I believe is a superb display. They have demonstrated skill, commitment and good humour and I hope that their example will inspire some to consider a career in the RAF. We are all happy to talk about our experiences in the Service and answer any questions that you may have so please don't hesitate to ask any member of the team.

All of us on the RAF Typhoon Display Team are very proud of this season's display. I hope you enjoy watching it as much as we have enjoyed bringing it to you.



# Management



**Flt Lt Andy De Gier**

Typhoon Display Manager

Andy joined the RAF as a pilot in 2010 after studying Aeronautical Engineering at Durham University where he was also a member of Northumbrian Universities' Air Squadron. After Initial Officer Training he completed postings at the Permanent Joint HQ and Joint Forces Command before Elementary Flying Training at RAF Cranwell. He joins the team from an Operational tour in Afghanistan and will be departing after the display season to begin Basic Fast Jet Training at RAF Linton-on-Ouse. In his spare time Andy enjoys football, squash and sailing.



**Chf Tech Rob Huckle**

Team Engineering Manager

Rob joined the RAF in 1989 as an Aircraft Electrical Mechanic.

Deployed at first line on Operations in Europe, the Middle East and the South Atlantic he has also instructed Officers and Other Ranks on the Jaguar and Chinook Aircraft. An experienced Battle Damage Repair Specialist he has successfully recovered aircraft in the field in Afghanistan and joined 29(R) Sqn in 2011. Rob is married to Amanda and they have two boys Benn and Matthew. Rob is a Classic Mini enthusiast who both drives and restores them.



**Sgt Brett Poppleton**

Deputy Engineering Manager

Brett joined the RAF in 2000 as an Avionics Technician. He has spent his whole career first line deployed on Operations and exercises throughout the world. He has previously worked on 1(F) Sqn (Harriers) and has served on the Typhoon Force since 2007, initially on XI Sqn. An experienced Typhoon engineer he joined 29(R) Sqn in 2012 and is currently in charge of the Training Cell.

# Supervising Officers



**Wg Cdr James Heald**

Officer Commanding  
29(R) Sqn, Display Supervisor

Wg Cdr Heald joined the RAF as a graduate in 1992.

He completed tours flying the Jaguar on 41(F) Sqn & 6 Sqn and was subsequently posted to the USN for 3 years flying the F/A-18. He was awarded the Queen's Commendation for Bravery in the Air in 1999 and the DFC in 2003. Since posting to the Typhoon Force as a Squadron Leader in 2009 he has completed operational tours in Afghanistan and the Middle East. Wg Cdr Heald took command of 29(R) Sqn in Dec 2013. James is married to Sophie, has two sons and is a keen cricketer and cyclist.



**Sqn Ldr Garry Stratford**

Executive Officer 29(R) Sqn,  
Deputy Display Supervisor

Sqn Ldr Stratford joined the RAF in 1998. He completed

his first front line tour flying the Tornado F3 on XI(F) Sqn before posting to the Typhoon Force on 3(F) Sqn. Strats has completed operational tours in Iraq, multiple overseas exercises and served as OC 1435 Flt in the Falkland Islands during the transition from Tornado F3 to Typhoon. He joined 29(R) Sqn as a Flight Commander in May 2012. Strats is married to Claire, they have 3 children, and he is a keen rugby and cricket enthusiast in his spare time.



**Sqn Ldr Bryn Kirby**

29(R) Sqn Senior  
Engineer Officer

Bryn joined the RAF as an Engineer

Officer in 2005 after graduating from the University of Bath. With previous postings seeing him undertake engineering roles on the Tornado, Nimrod and Sea King aircraft, Bryn has also completed Operational tours in Afghanistan and the Middle East. More recently, he was employed as an airworthiness regulator within the Military Aviation Authority before joining 29(R) Squadron in 2014. Married to Sian, Bryn's interests include playing the piano and guitar.

# Engineering Officers



**Flt Lt Rob Staveley**

29(R) Sqn Junior  
Engineer Officer

Rob joined the RAF in 2008 as an Engineer Officer (Aerosystems). After training he was employed as a Flight Commander for a large Tornado avionics test and repair facility before joining the Red Arrows in 2011. There he had a busy role underpinning the engineering functions that support the world famous display team. In 2013 he joined 29(R) Squadron as a Junior Engineer Officer. Rob is engaged to Laura and they have a baby son, Thomas. Rob enjoys shooting and hill walking in his spare time.



**FS Nigel Barker**

29(R) Sqn Flight  
Sergeant Engineer

Nigel joined the RAF in 1985 as an Air Radar Technician. He has been employed at second line on the Tornado and spent six years on a specialist Radar and EW Team at RAF Wyton on new equipment projects. Often detached to the USA, he also deployed to the Middle East on Operations. Posted to RAF Coningsby in 2010, he moved to 29(R) Squadron in 2013. Nigel lives with his family in Norfolk where he enjoys exploring the countryside, either on foot or in his Westfield sports car.



**FS Chris York**

29(R) Sqn Flight  
Sergeant Engineer

Christopher joined the RAF in 1983 as a Propulsion Mechanic and has worked on Hercules, Pembroke, Lightning, Tornado F3 & GR4 and Typhoon. He has completed tours in Germany, the Falkland Islands and the UK whilst participating in detachments to Europe, America, Asia and the Middle East. 'Yorkie' joined 29(R) Squadron in December 2010. His interests include walking, metal working and as a Sub Aqua Dive Supervisor he leads expeditions around the World with a passion for UK wreck diving. Chris is married to Gail and has a daughter Annaliese.



Image courtesy of RAF Coningsby, Typhoon Display Team



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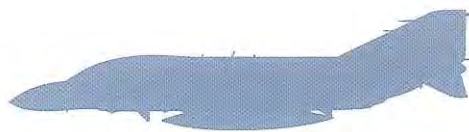
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# Team Phantom



**Sgt Stuart Hastings**

SNCO Team Leader

Stu joined the RAF in 1997 as a Mechanical Engineer. He has worked on multiple fast jet platforms including Tornados, Harriers, Jaguars and Typhoons. He has been working on the Typhoon Force for several years, serving on XI Sqn for 5 years and then moving to 29(R) Sqn in Apr 2011. He has completed 2 tours in the Falkland Islands and was a member on the Jaguar display team for 4 years. Stu has been married to his wife Claire for 14 years and has two children: Joshua (14) and Isabel (7).



**Cpl Mike Treharne**

Deputy Team Leader

Mike joined the RAF in 2001 as an Avionics Technician. He has been deployed at first line to Gioia Del Colle on Operation ELLAMY and the Falkland Island twice with the Typhoon. He was employed in the Tornado Flight systems bay at RAF Marham for 3 years. He arrived at 29(R) Sqn in 2006 and has participated in the Typhoon Display team during the 2007, 2008 and 2013 seasons. Mike is married to Ruth and has two sons; Rhys and Owen. Mike enjoys sea fishing, road cycling and rugby union, being an avid Scarlets rugby fan.



**Cpl Dave Price**

JNCO

Dave joined the RAF in 2001 as a Propulsion Technician before becoming an A Tech Mech in 2005 after completion of his Airframe Technician course. He spent 7 years working on Harrier second line before being posted to Tornado first line and deploying to Italy in support of Operation ELLAMY. Dave was posted to 29(R) Sqn in June 2011 and has since enjoyed a tour of the Falkland Islands. He is engaged to Charlotte and in his spare time enjoys sub aqua diving and fishing.



### **SAC Brad Rawle**

Airman

Brad joined the RAF in June 2012 as an Aircraft Maintenance Mechanic (Mechanical). After completion of trade training, he was posted to 29(R) Squadron in March 2013. Soon to be posted back to RAF Cosford to complete his further training, he hopes to be able to return to 29(R) Squadron as a Technician. Brad is an avid football fan and is a proud Manchester United supporter. He also enjoys fishing, motorsport and is a keen motorcycle enthusiast.



### **SAC Matthew Dodge**

Airman

Matt joined the RAF as an Armourer in February 2008. After trade training he was posted to 29(R) Squadron in 2010. His time on 29(R) Sqn has seen him travel all over the world, from the Falkland Islands to Gibraltar, Austria, various detachments to Scotland, as well as southern Italy as part of Operation ELLAMY. Matt owns a house in Lincoln and enjoys spending time travelling, socialising, doing DIY, as well as clay pigeon and target shooting.

## **Ground Support Systems**



### **Cpl David McMahon**

JNCO



### **SAC Christian Heselton**

Airman







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# Team Lightning



**Sgt Stu Dutch**  
SNCO Team Leader

Stu joined the RAF in 1996 as an Aircraft Electrical Technician. He was initially posted to RAF Lossiemouth on Jaguars and after further training was posted to RAF Coltishall again on Jaguars. In 2003 he was posted to 17(R) Sqn, the Typhoon Operational Evaluation Unit, as an Avionics Technician. In 2009 he was seconded to BAe Systems to aid with introducing Typhoon to the RSAF. In 2011 he was posted to 29(R) Sqn. He has been deployed to USA, Falkland Islands and Turkey. Stu is engaged to Emma who also serves in the RAF in Personnel Support.



**Cpl Mark Middleton**  
Deputy Team Leader

Mark joined the RAF in 2000 as an Airframe Technician. He has served at RAF Marham on Tornado GR4 aircraft, both at 1st & 2nd Line, and at RAF Scampton on the Red Arrows Hawk display aircraft. Promoted to Corporal in 2009, Mark was posted to 29(R) Squadron at RAF Coningsby. He has completed various overseas tours including 2 tours of the Falkland Islands. Mark lives in Lincoln with his partner Laura. He is a keen runner and motorcycle enthusiast.



**Cpl Paul Smith**  
JNCO

Paul joined the RAF in 2002 as an Avionics Technician. In 2003 he was posted to the Radar Bay at RAF Marham. Promotion saw a move to ISTAR Eng where he completed tours in support of Operation HERRICK and Operation ELLAMY. In August 2011 he was posted to 29(R) Sqn and deployed to the Falkland Islands as QRA Cmdr in October 2012. In his spare time he enjoys playing and coaching football in the local community. Paul is married to Hannah with one child, Alfie.



### **SAC Joseph Gray**

Airman

Joe joined the RAF in March 2012 as an Aircraft Maintenance Mechanic (Mechanical) and, after training, joined 29(R) Sqn in January 2013. He has been detached to Scotland, Cyprus and the Falkland Islands. Joe is a keen rugby player, playing in the Yorkshire league, has fought nationally at karate and also plays amateur cricket to a high standard. He is due to be married to Ash and has a son Jacob.



### **SAC Chris Macartney**

Airman

Chris joined the RAF in 2004 as a Weapons Technician after completing his A-Levels. Once trained, he was posted to RAF Lossiemouth on Tornado role equipment maintaining Mk10a Ejection Seats. He was posted to 29(R) Squadron in 2009 and has deployed to Afghanistan, Cyprus, Gibraltar and Southern Italy during Operation ELLAMY. Originally from Bangor in Northern Ireland, this is his second season on the display team. He has just bought his first house and lives with his girlfriend Tash and his dog Bear.

## **Ground Support Systems**



### **Sgt Jason Smith**

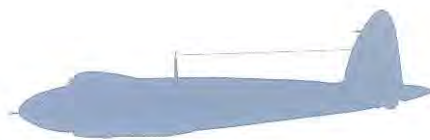
SNCO GSS Team Leader



### **SAC Kelly Chapman**

Airwoman

# Team Mosquito



**Sgt Lee Salkeld**  
SNCO Team Leader

Lee joined the RAF in October 1999 as an Avionics Technician.

He held posts at Coningsby and Leeming on Tornado F3, then a post at RAF Kinloss for 1 year, prior to joining 3(F) Sqn and subsequently 29(R) Sqn at RAF Coningsby on Typhoon. He has deployed on Operations and exercises in Saudi Arabia, USA, Italy, the Falkland Islands, UAE, Bahrain and Lithuania with Tornados and Typhoon. This is Lee's second season on the Typhoon display team. He is married to Frankie and enjoys mountain biking and rugby league.



**Cpl Dean Bunney**  
Deputy Team Leader

Dean joined the RAF in 2002 as an Airframe Tradesman. Posted to

RAF Cottesmore in 2003, he served on 3(F) Squadron on the Harrier and did two Operational tours of Afghanistan in 2004/5. In 2006 he moved into the Harrier composite structure workshop at Cottesmore, before being posted to 11 Squadron at RAF Coningsby on the Typhoon aircraft. Dean recently joined 29(R) Squadron's Heavy Rects Team. He spends his spare time with his wife Jenny, and has a young daughter Morgan.



**Cpl Stu Ball**  
JNCO

Stu joined the RAF in 1998 as an Aircraft Electrical Mechanic. His postings

include 6 Squadron at RAF Coltishall on the Jaguar aircraft, RAF Bruggen Germany on the Tornado Aircraft, 2(AC) Sqn and 9 Sqn Tornado at RAF Marham and the Tornado GR4 depth maintenance facility. He has deployed on Operations in Europe, the Middle East and the South Atlantic. Stu joined 29(R) Squadron at Coningsby in 2011. He lives with his partner Julie and in his spare time enjoys playing golf and watching football.



### **SAC Brad Hunt**

Airman

Brad joined the RAF in 2008 as a Mechanical Aircraft Technician.

He was posted to 8 Squadron in 2009 where he worked on Sentry E-3D aircraft as an Aircraft Maintenance Mechanic. Brad joined 29(R) Sqn in 2011 and has successfully completed a four month tour on 1435 Flight in the Falkland Islands. Originally from Swansea in South Wales, Brad enjoys keeping fit and travelling the world.



### **SAC Gav King**

Airman

Gav joined the RAF in 2007 as a Weapons Technician. After his basic

training at RAF Halton and trade training at DCAE Cosford, Gav joined 29(R) Sqn in 2009. He has deployed at first line in Italy on Operation ELLAMY, the USA on Exercise RED FLAG and the South Atlantic at MPA Falklands. Gav is married to Chloe, and has a Jack Russell called Busta. Gav is a keen footballer who enjoys playing 5-a-side and 11-a-side for the squadron.

## **Ground Support Systems**



### **Sgt Rhys Edgell**

SNCO



### **Cpl Christopher Nind**

JNCO

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# Public Relations

“The Typhoon Display Team plays an important role in promoting the excellence of the Royal Air Force, its personnel and equipment. The 2014 Public Relations (PR) Team will be doing exactly that as they travel to many of the events throughout the display season.”

[WWW.RAF.MOD.UK/TYPHOONDISPLAY](http://WWW.RAF.MOD.UK/TYPHOONDISPLAY)



**Cpl James Rae**  
PR Manager

Jamie joined the RAF in 1999 as an Avionics Technician.

Having served on 13 Sqn Tornado GR4 and second line in Electrical Engineering Sqn at RAF Marham, he was then posted to Scotland and served on Nimrod MR2s at RAF Kinloss as a Tactical Sensors Tradesman. Jamie has deployed on

Operations to the Falkland Islands, Iraq, Kuwait and the Middle East, and on exercise in America, UAE and throughout Europe. Jamie is currently in charge of the line at 29(R) Sqn. In his spare time he enjoys skiing, football and is an avid Newcastle United fan.



# Engineering Trades



## Mechanical Trade

Mechanical Technicians (Mechs) maintain the Typhoon's propulsion, fuel and hydraulic systems as well as maintaining the airframe's structural integrity. This includes fault diagnosis, rectification, fault trending, out of phase servicing and major and minor component changes of the mechanical systems. The Typhoon's advanced technology not only requires a good understanding of these mechanical systems, but also the many onboard computers that can be interrogated to aid fault diagnosis. The mechanical trade relies on good teamwork, and an analytical approach to fault finding, making it a demanding but rewarding career path.



## Avionic Trade

Avionics Technicians (Fairies) are responsible for maintaining the Typhoon's electrical system, cockpit instrumentation and aircraft computers. These complex computer systems manage the aircraft's flying controls, radar, communication, navigation, aircraft defensive control and weapon targeting systems. The Avionics trade works closely with mechanical and weapon technicians in diagnosing and maintaining the aircraft due to the high level of system integration on the aircraft. Overall, there are very few systems on Typhoon that the Fairies are not involved in maintaining.





### Weapons Trade

Weapons Technicians (Armourers) are responsible for arming the multi-role Typhoon with a wide variety of weaponry which includes the 27mm Mauser Cannon, ASRAAM and AMRAAM air-to-air missiles, laser guided Paveway bombs, 1000 litre fuel tanks and defensive countermeasures (chaff and flares). The Armourers are also responsible for the crucial task of fitting, removing and arming the Crew Escape System components which include the Martin-Baker Mk16a Ejection Seat and Canopy Jettison System.



### Aircraft Maintenance Mechanics

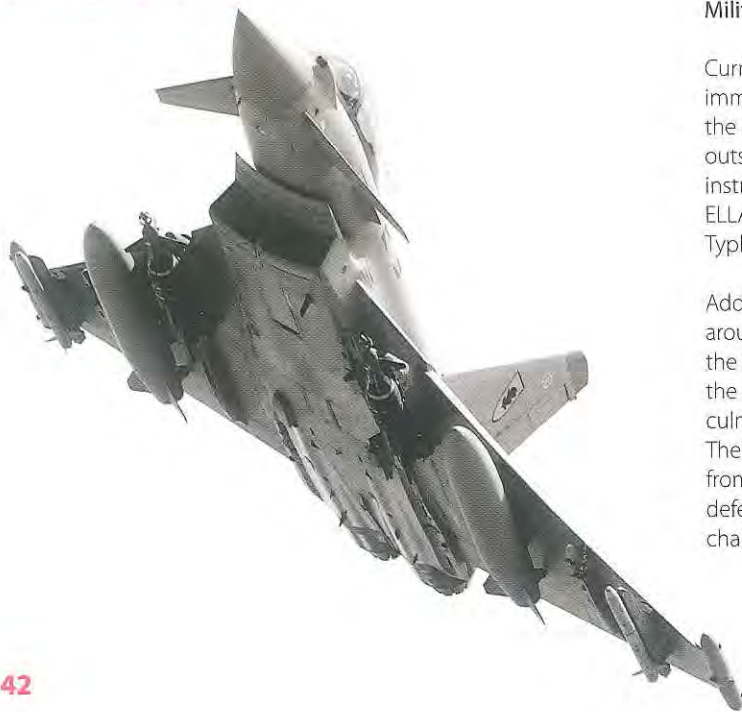
Aircraft Maintenance Mechanics (AMMs) are responsible for the general ground handling and flight servicing of the Typhoon. Junior technicians will act as an AMM before they specialise as either a Mechanical or Avionics Technician. This involves checking the aircraft for damage and refuelling and replenishing the engine and gearbox oil systems. AMMs assist with the replacement of both mechanical and avionic components, regardless of their future technician trade. The variety of tasks which they are employed in allows them to gain valuable experience of working around aircraft.



# The Typhoon



# Typhoon FGR4



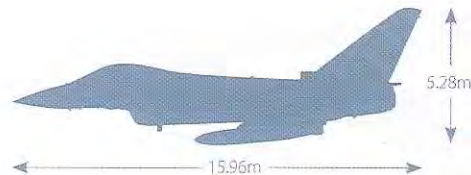
The Royal Air Force Typhoon FGR4 is a world class multi-role combat aircraft capable of being deployed in the full spectrum of air operations, from air policing and peace support, through to high intensity conflict. It provides the RAF with an agile and highly flexible aircraft that significantly enhances the UK Military's war fighting capability around the world.

Currently, Quick Reaction Alert (QRA) Typhoons stand at immediate readiness to protect sovereign airspace both here in the UK and in the Falkland Islands. But the Typhoon is not just an outstanding air defence fighter. In 2011, the Typhoon Force proved instrumental in operational missions over Libya during Operation ELLAMY, flying from Gioia del Colle in Italy and demonstrating the Typhoon's adaptability and reliability.

Additionally, Typhoon has been deployed on numerous exercises around the world. More recently the Typhoon was deployed to the Middle East on Exercise MAGIC CARPET, where once again the aircraft demonstrated its world-class attributes and capability, culminating in displays at air shows in the UAE, Qatar and Bahrain. The Typhoon FGR4 continues to impress on the world stage, going from strength to strength. Whether on operations, exercises or in defence of sovereign airspace, Typhoon is well placed to meet the challenges of the future.

# Technical Data

Eurofighter Typhoon has exceptional acceleration, and instantaneous and sustained turn rate performance. Fuel efficient, its 'supercruise' capability enables supersonic performance without reheat. Using control technology with aerodynamic instability and extensive use of carbon composite, the airframe and engine are some 10 - 20% smaller and 30% lighter than their predecessors. The information shown via three Multi-function Head Down Displays (MHDD), a Head-Up Display (HUD) and a Helmet Mounted Display (HMD), provides the pilot with all the tactical details for his mission. Night Vision Goggles (NVGs) are integrated into the cockpit where Hands on Throttle And Stick (HOTAS) reduces the pilot's workload. Future weapon programmes are planned to carry Meteor Air-to-Air Missile, Paveway IV, Storm Shadow and Brimstone. With further upgrades, the Eurofighter Typhoon will continue to lead the way for 'multi-role combat aircraft' and the Royal Air Force.



Brakes off to  
**35,000ft/M1.5**  
**<2.5 minutes**

Brakes off to lift off  
**<8 sec**

At low level  
**200 Kts to**  
**Mach 1 30 secs**

**Supercruise**  
**Capability**  
**& Dry Power**  
**Acceleration**  
from sub to  
**supersonic**

**Mauser 27mm canon**

**Maximum speed**  
**Mach 2+**

**G-Limits +9/-3g**

**2x Eurojet EJ200**  
reheated turbofans

**Max thrust per engine**  
**90Kn (20,000lbs)**

**4x ASRAAM**

**4x AMRAAM**

**Paveway II &**  
**enhanced**

**1000lb**  
freefall bomb

**Laser designating**  
pod capability

# Typhoon Evolution



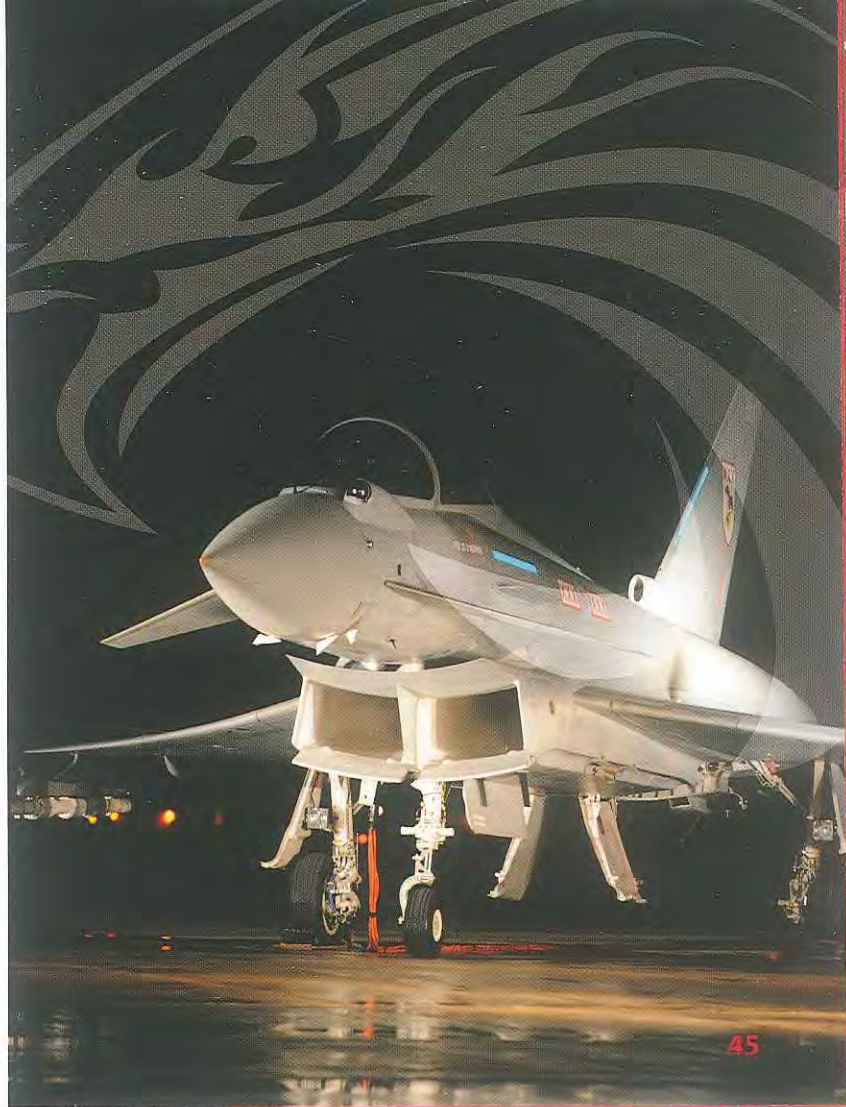
Typhoon provides the RAF with a multi-role combat aircraft, meaning it is able to use its own air-to-air capability to fight its way to a ground target and can be deployed in the full spectrum of air operations.

Italy and Spain formally agreed to start development of the aircraft in 1988 with contracts for a first batch of 148 aircraft – of which 53 were for the RAF – signed ten years later. Deliveries to the RAF started in 2003 to 17(R) Sqn who were based at BAe Systems Warton Aerodrome in Lancashire (alongside the factory where the aircraft were assembled) while detailed development and testing of the aircraft was carried out. Formal activation of the first Typhoon Squadron at RAF Coningsby occurred on the 1 Jul 2005. The aircraft took over responsibility for UK QRA on 29 Jun 2007 and was formally declared as an advanced Air Defence platform on 1 Jan 2008.

Initial production aircraft of the F2 Tranche 1 standard were capable of air-to-air roles only and were the first Typhoons to hold UK QRA duties. In order to fulfill a national requirement for Typhoon to deploy to Operation HERRICK, urgent UK work was conducted on Tranche 1 to develop an air-to-ground capability in 2008. Tranche 1 aircraft were declared as multi-role in Jul 2008, gaining the designation FGR4, fielding the Litening Laser Designator Pod and Paveway 2, Enhanced Paveway 2 and 1000lb freefall class of

weapons. Tranche 2 aircraft deliveries commenced under the 4-nation contract in 2008, in the air-to-air role only. These aircraft, which were deployed to the Falkland Islands assumed take-over duties from the Tornado F3 in Sep 09. Upgrades to Tranche 2 as part of the main contract to provide air-to-ground capability were concluded in 2012.

The Typhoon is currently operated by 6 Squadrons in the RAF; numbers 1(F) and 6 Squadrons at RAF Leuchars and numbers 3(F), 11, 29(R) Squadrons and 41(R) TES at RAF Coningsby. As part of the Strategic Defence and Security Review in 2011 it was announced that the Typhoon Squadrons and QRA (North) based at RAF Leuchars would be relocated to RAF Lossiemouth during summer 2014. They will be joined in April 2015 by II(AC) Squadron who will be stood down as a Tornado Squadron at RAF Marham and reactivate as a Typhoon Squadron the following day. Future weapons integration will include Meteor air-to-air Missile, Paveway IV, Storm Shadow, Brimstone and Small Diameter Bomb. Additionally, it is intended to upgrade the radar to an Active Electronically Scanned Array.



# 29(R) Squadron

No 29 Squadron was formed at Gosport on 7<sup>th</sup> November 1915 and after initial training, moved to France as the third Royal Flying Corps Squadron to be fully equipped with fighters. The Squadron's DH2s were engaged in escort duties to protect slow and vulnerable reconnaissance aircraft over the Western Front before the Squadron was disbanded on 31<sup>st</sup> December 1919.

On 1<sup>st</sup> April 1923 the Squadron reformed as a fighter squadron at Duxford with Snipes, re-equipping with Grebes in January 1925. In March 1935, 29 Squadron became a two-seat fighter squadron with the arrival of the Demons which it took to Egypt during the Abyssinian Crisis. In 1938, the Squadron converted to Blenheims, using these for shipping patrols and as night-fighters, as well as early trials with airborne radar. In February 1941, 29 Squadron re-equipped with Beaufighters which in turn were replaced by Mosquitos in May 1943. At the end of the war the Squadron moved to West Malling to become part of the peace-time night-fighter force in the UK.



Between 1945 and 1967 the Squadron flew Mosquitos, Meteors and Javelins, was based in Cyprus and deployed to Zambia for nine months in 1965 during the Rhodesian Crisis. In May 1967, the Squadron returned to Britain to re-equip with Lightnings, before converting to Phantoms in January 1975. In August 1982, a detachment from the Squadron was sent to Stanley Airfield in the Falkland Islands to provide air defence at the end of the Falklands War.

29 Squadron converted to Tornado F3 fighters in 1987 and after 11 successful years, disbanded in October 1998. In September 2003, the Squadron began to reform at BAe Systems' Warton Aerodrome as the early core of the Typhoon Operation Conversion Unit, responsible for the technical and tactical training of all engineers and pilots for the Typhoon Force. 29 (Reserve) Squadron officially stood up at its current home of RAF Coningsby on 4<sup>th</sup> November 2005.



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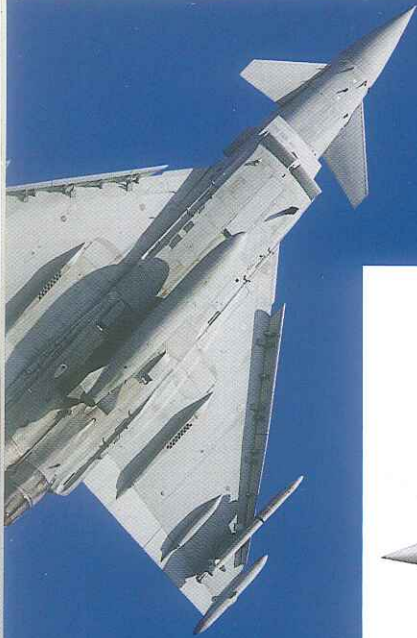
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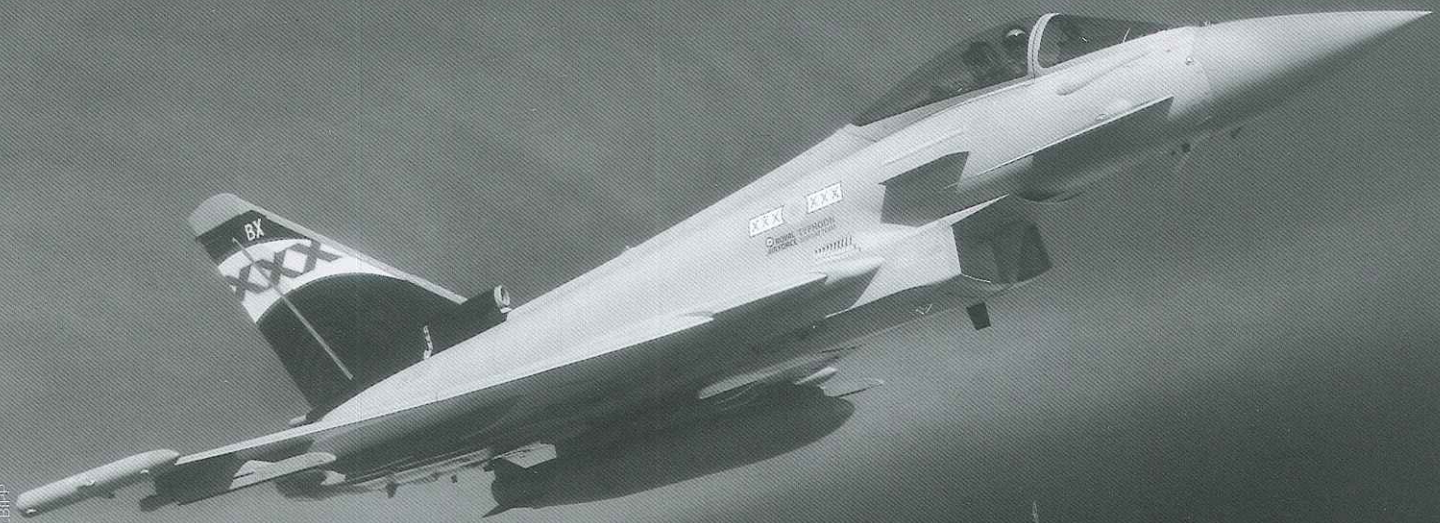
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The RAF family includes all serving and ex-serving personnel and their dependants. To be eligible for welfare support, either for themselves or those who depend upon them, service personnel need to have served a minimum of one day in the RAF.

The Association exists in the recognition that RAF personnel and their immediate families dedicate their lives to their country, and to ensure that such a sacrifice does not result in suffering, poverty or loneliness.

Whether it's an injured airman fighting to get back on his feet, a young child missing their parent away on overseas operations or a World War II veteran needing a shoulder to lean on, we are here to help all generations of RAF Service personnel and their families.

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fly2help is an aviation charity that inspires positive change through the wonder of flight. Our vision is for everyone to be able to access the positive benefits of aviation. Established in 2006 by a group of passionate aviators, fly2help is in the process of expanding to airfields throughout the country.

### **Air Smiles Days**

fly2help provides Air Smiles Days – exciting experience days, centred around a short flight in a light aircraft – to people living in difficult situations, including illness, disability, bereavement and isolation. Air Smiles Days aim to bring joy and laughter, create and capture magical memories, boost confidence and self-esteem and offer respite to individuals, families and groups.

### **Aim High**

fly2help's educational programme encourages young people to consider a future career within the aviation industry.

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**W:** [www.fly2help.org](http://www.fly2help.org)

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Charity number 1119846

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crew during the 2014 display season

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# The Display Schedule



# May

- 8** Landowner's Day  
RAF Shawbury, Shropshire
- 24, 25** D-Day Anniversary Show  
Duxford, Cambridgeshire



# June

- 7** Throckmorton Air Show  
Worcestershire
- 8** RAF Cosford Air Show  
RAF Cosford, Shropshire
- 8** Welshpool Air Show  
Welshpool, Powys
- 21, 22** Meeting de l'Air Cazaux,  
France
- 27, 29** Goodwood Festival of Speed  
Chichester, Sussex
- 28** National Armed Forces Day  
Stirling, Stirlingshire

# July

- 5, 6** RAF Waddington  
International Airshow  
RAF Waddington, Lincolnshire
- 11, 12,** Royal International Air Tattoo Fairford,  
**13** Gloucestershire
- 18, 19,** Farnborough International Airshow  
**20** Farnborough, Hampshire
- 24** RAF Coningsby Families Day  
RAF Coningsby, Lincolnshire
- 25, 26,** Sunderland International Airshow  
**27** Sunderland, Tyne and Wear
- 26** Scottish National Airshow at East  
Fortune, East Lothian
- 27** Cleethorpes Air Show Cleethorpes,  
Lincolnshire

# August

- 8,9** Bristol International Balloon Fiesta  
Bristol, Gloucestershire
- 8** Cowes Week  
Cowes, Hampshire
- 9** BE Aerospace Festival of Flight  
Newcastle, County Dow
- 10, 11** Blackpool Seafront Air Display  
Blackpool, Lancashire
- 15, 16** Airbourne 2014: The Eastbourne
- 17** International Airshow  
Eastbourne, Sussex
- 17** Bay Day Air Display at Herne Bay  
Herne Bay, Kent
- 29, 30** Bournemouth Air Festival
- 31** Bournemouth, Dorset
- 29** 170<sup>th</sup> Port of Dartmouth Royal Regatta  
Dartmouth, Devon
- 30, 31** The RAFA Shoreham Airshow  
Shoreham, Sussex

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# September

- 1** RAF Scampton Families Day 2014  
RAF Scampton, Lincolnshire
- 6, 7** Air 14 Celebration 100<sup>th</sup> Anniversary  
of Military Aviation in Switzerland  
Payerne, Switzerland
- 20, 21** Southport Airshow  
Southport, Lancashire



# Paint Scheme 2014



This year the RAF Typhoon Display Team has a unique aircraft paint scheme. The impressive design showcasing the Typhoon this season was created by Technical Illustrator Adam Johnson in the lead up to 29(R) Squadron's Centenary year in 2015. It pulls together various historical markings from previous aircraft types.

The red and yellow version of 'XXX' across the tail was last seen on Tornado F3s operated by 29(R) Sqn. The Triple 'X' featured on Sqn aircraft in the 1920s as the Sqn designator. Popular stories behind the tradition include the link to a brewers mark for 'extra strong'

and a mis-spelling of the roman numerals for 29 placed either side of the roundel; 'XXIX' or "XX, one X" when the markings were placed on an aircraft. The Sqn has continued these traditional markings on all of its various aircraft types and uses Triplex as a formation call sign to this day.

The eagle's head pictured in a grey 'watermark' is taken from the Sqn crest which depicts an eagle attacking a buzzard, symbolising air combat. For the first time on a RAF Typhoon, the foreplanes have also been painted. The matching anthracite black foreplanes will show off the 29 and

triple X markings when the aircraft is parked, foreplanes forward, in its trademark stance at air shows.

The actual paint work was completed by Serco, the contractor responsible for maintaining the Typhoon fleet's paint at RAF Coningsby. The team of aircraft paint specialists completed the work over a period of 7 days. The aircraft now designated BX will be the pride of 29(R) Sqn's fleet.

**serco**  
Surface Finish

# Thank you to...

Brochure edited by Flight Lieutenant Andy De Gier and Chief Technician Rob Huckle.

Photography courtesy of RAF Coningsby Photographic Section; SAC Dan Herrick and SAC Chris Ellis.

With thanks to Craig Sluman, Viv Porteous and Ken Chapman for supplying additional images and to Paul Elliott for supplying the front cover image.

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