Operations Research Systems Analysis (Functional Area 49) Overview
“To help leaders make informed decisions”
KNOWLEDGE: The FA49 community consists primarily of individuals with academic degrees from analytically rigorous disciplines. Upon accession into FA49, developmental career planning will emphasize graduate study in an ORSA-related field. ORSA-specific professional military education will emphasize practical application of analytical tools, critical thinking, and straightforward communication of complex results. 85% of Army ORSAs possess a graduate degree. FA49 selects officers from all operational backgrounds, which enables the functional area to assist with problem-solving in every facet of Army and Joint operations. Our officers have demonstrated the ability to serve successfully as tactical leaders. This tactical experience provides the common understanding necessary for FA49s to communicate effectively with Army leaders and decision-makers.

- RELEVANT EDUCATION: Operations Research; Science, Technology, Engineering, and Mathematics (STEM); Economics; Business;
- RELEVANT TRAINING / EXPERIENCE: Operations Research/Systems Analysis – Military Applications Course (ORSA-MAC), Functional Area 49 Qualification Course

BEHAVIORS: (In addition to foundational)
- BALANCED (WORK/LIFE)
- COLLABORATIVE
- COMMITTED
- COOPERATIVE
- CUSTOMER-FOCUSED
- DEPENDABLE
- DETAIL-FOCUSED
- DILIGENT
- HARD-WORKING
- INDEPENDENT
- INITIATIVE
- INQUISTIVE
- INTELLECTUALLY-CURIOUS
- PERCEPTIVE
- PRECISE
- PROACTIVE
- PROBLEM SOLVING
- RATIONAL
- RESPONSIBLE
- THOUGHTFUL
- BALANCED (WORK/LIFE)
- COLLABORATIVE
- COMMITTED
- COOPERATIVE

TALENT PRIORITIES:
1. PROBLEM SOLVER: Able to choose between best practices and unorthodox approaches to reach a solution. Thinks outside the box.
2. LOGICAL/ANALYTICAL: Uses reason and thinks in terms of cause and effect. Able to deconstruct and solve complex problems.
4. COMMUNICATOR: Precise, efficient, and compelling in both written and spoken word.
5. INNOVATIVE: Creative, inquisitive, and insightful. Easily identifies new solutions and catalyzes change.
6. DOMAIN SPECIFIC EDUCATION: Focus on relevant disciplines listed above, with an emphasis on science, technology, engineering, and math (STEM).
**Implementation of Operations Research to help decision making**

### Forecasting
- POM analysis to determine and justify Army funding
- Monthly manpower requirements & distribution (7-year forecast)
- USTRANSCOM mobility and feasibility requirements for inter-theater lift
- Battlefield analysis to predict attacks

### Optimization
- Inventory distribution IAW Army guidance given constrains on time, budget, and distance
- Enlisted promotions given manning policies and constraints

### Simulations
- COMBAT XXI used for weapon systems and tactics evaluation
- Wargame simulations to prove/disprove force structure requirements for new weapon systems
- Campaign Plan assessments

### Evaluations and Studies
- Integration of women into combat arms
- Linking objectives to Measures of Effectiveness
- Using assessments and survey data to focus efforts
- Evaluate the need for upgrades to equipment

ORSAs encompass a wide variety of Problem-Solving Methods to help inform Decision Making!
**ORSAs help leaders make decisions:** ORSA techniques are important decision support tools that provide leaders with analysis that is grounded in Operations Research Methods so that leaders have both a quantitative and qualitative basis for making decisions.

### Examples of OR Methods

- **Y = f(X₁, X₂, …, Xₙ)**

**Applied Probability & Stats**
- Markov Chains
- Regression
- Design of Experiments
- Data Mining
- Forecasting

**Modeling & Simulation**
- Monte Carlo Methods
- Discrete Event Simulation
- Queuing Theory
- Campaign Modeling

**Optimization**
- Linear Programming
- Nonlinear Programming
- Network Flows
- Scheduling

**Decision Analysis**
- Decision Trees
- Value-Focused Thinking
- Analytical Hierarchy Process
- Game Theory

### Applied to...

- Resource Allocation
- Inventory Management
- Personnel Assignments
- Risk Analysis
- Operational Assessments
- Forecast Demand
- Multi-criteria Decisions
- Logistics Modeling
- Test & Evaluation
- Supply Chain Management
- Cost Benefit Tradeoff
- Campaign Level Modeling
- Prioritize Alternatives
- Transportation Networks
- Portfolio Optimization
- Prediction Problems
- Project Management
- Classification Problems
- Investment Decisions

**FA49s must have a deep grounding in both analytical methods and functional knowledge in order to help solve problems**
Where ORSAs do it

FA49s work across the Army and Joint community; both in small ORSA cells within commands and in large analytical agencies.

FA49 Auth Density
- Small (<10)
- Medium (10-99)
- Large (100 or more)

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Date: 1 February 2017
### ORSA - Proponent Brief

**Functional Training**

- **ACS (Masters) - Advanced Civil Schooling**
- **ORSA-MAC - ORSA Military Applications Course**

**PME**

- **FA49 Qualification Course (Phase II)**
- **ILE - Intermediate Level Education (Phase I)**

**Key Developmental Assignments**

- **Army Command**
- **Operating Force**
- **Staff/FOA/DRU**
- **Education**

**Development / Broadening Assignments**

- **Analytic Agency (CAA, TRAC)**
- **ATEC/OTC Analyst**
- **Personnel Analyst (G1, HRC, USAREC, Cadet Command)**
- **TRADOC CoE Analyst (Maneuver, Fires, Maneuver Support, Intel, Sustainment)**
- **USMA Instructor**

**Virginia Tech Institute for Policy and Institutions (VTIP) Window**

6-14 YOS

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**Institutional Domain**

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**ORSA-MAC**

**Academic Degree Options**

- ACS (Masters) - Advanced Civil Schooling
- ORSA-MAC - ORSA Military Applications Course
- PME - Senior Service College Functional Training
- JPME II - Joint Professional Military Education
- ACS (PhD) - Advanced Civil Schooling
- SAMS - School of Advanced Military Studies

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**When ORSAs do it – FA49 Development Timeline**

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**Operational Domain**

**Key Developmental Assignments**

- Army Command
- Operating Force
- Staff/FOA/DRU
- Education

**Development / Broadening Assignments**

- Analytic Agency (CAA, TRAC)
- ATEC/OTC Analyst
- Congressional Fellowship
- COCOM Analyst
- Personnel Analyst (G1, HRC, USAREC, Cadet Command)
- TRADOC CoE Analyst (Maneuver, Fires, Maneuver Support, Intel, Sustainment)
- Instructor (USMA, ORSA-MAC, Q-Course)
- Division/Corps/ASCC/TSC Analyst
- Joint Staff/OSD Analyst
When ORSAs do it –
FA49 Education Timeline

1st FA49 Job
• ACS (if selected)
  or
• ORSA-MAC (14 wks, ALU)
  and/or
• ILE (14 wks, Satellite Campus)

Enroute to 1st FA49 Job
• ACS (if selected)
  or
• ORSA-MAC (14 wks, ALU)
  and/or
• ILE (14 wks, Satellite Campus)

FA49 Transfer
• Complete Basic Branch assignment
• Apply for ACS
  - Take the GRE
  - Complete Calculus pre-requisites

Enroute to 2nd FA49 Job
• ILE (14 wks, satellite campus)
  or
• FA49 Q-Course (6 wks, ALU)
• ACS, if selected

2nd FA49 Job
• TDY-Return for Q-Course

Education Requirements
1. Entry Level
   • ORSA-MAC
     or
   • Proponent-Approved Masters Degree
2. Intermediate Level
   • ILE Common Core
     and
   • FA49 Qualification Course
3. Prior to Promotion to COL
   • Masters Degree
Useful Links

FA49 Collaboration Site (milBook)

• https://www.milsuite.mil/book/groups/fa49-orsa

Human Resources Command - FA49

• MAJ Nathan Riedel: 502-613-6686

Senior Leader Development Office

• LTC Heather Jackson: 703-602-9635

FA49 Proponent Office

• Stay tuned to http://fa49.army.mil
• MAJ Cardy Moten III: 703-695-3906 or Ms. Karen Miller: 703-695-4721 (DSN 221)

We are here to support you!