

CHINA'S FUTURE NUCLEAR FORCE INFRASTRUCTURE

NOTIONAL BREAKOUT SCENARIO



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**East Asian Alternative Nuclear Weapons Futures Workshop
Stanford University**

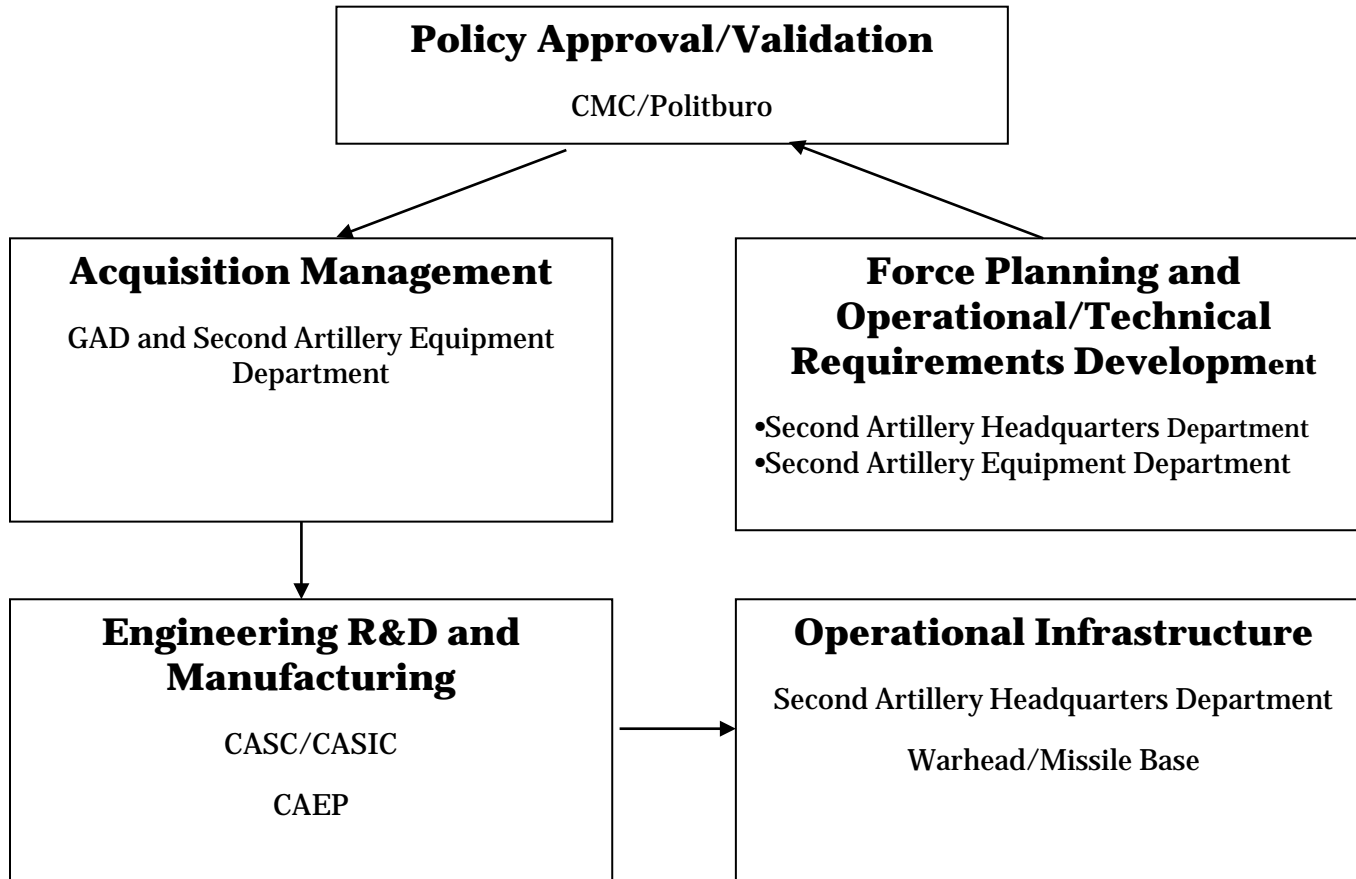
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- Scenario Assumptions
- Baseline Force Structure
- Strategic Drivers and Operational Requirements
- Acquisition Management
- Warhead Engineering R&D and Production Infrastructure
- Notional Operational Infrastructure in Breakout Scenario
- Conclusions

Scenario Assumptions

- **Current inventory of 250 nuclear warheads**
 - CMC entrusts Second Artillery Force as sole PLA warhead custodian
 - Centralized storage and handling under Second Artillery central warhead storage and handling complex in central China (Base 22)
 - Domestic political considerations are primary factors determining size of arsenal – security more important than operational effectiveness
 - Concealment of actual warhead inventory size allows for minimal number
 - Small number of warheads available under each of six corps-level missile base
 - At least one warhead is programmed, produced, and supplied for each nuclear-capable missile
- **Breakout scenario of 1500 warheads by 2025**
 - Parallel surge in production of missile systems and other delivery vehicles
 - Expansion of CAEP industrial capacity
 - No fissile material constraints
 - Adjustments within a static PLA organizational structure

Pathway toward a PLA Nuclear Expansion



Second Artillery General Headquarters

Organizational Structure

Commander



Wei Fenghe

Political Commissar



Zhang Haiyang

Direct Reporting Regiments

- Geodesy
- Strategic Communications
- Logistics Depot
- Missile Component Readiness
- Solid Motor Readiness
- Electronic Warfare
- Special Vehicle Training
- Intelligence

Engineering Divisions

- 308 Engineering Command
- Engineering Technology Group

Headquarters Department

- Chief of Staff
 - Deputy Chiefs of Staff
- Operations
- Intelligence, Surveillance, Reconnaissance
- Communications
- Engineering

Political Department

- Propaganda
- Organization and Discipline
- Cadre

Logistics Department

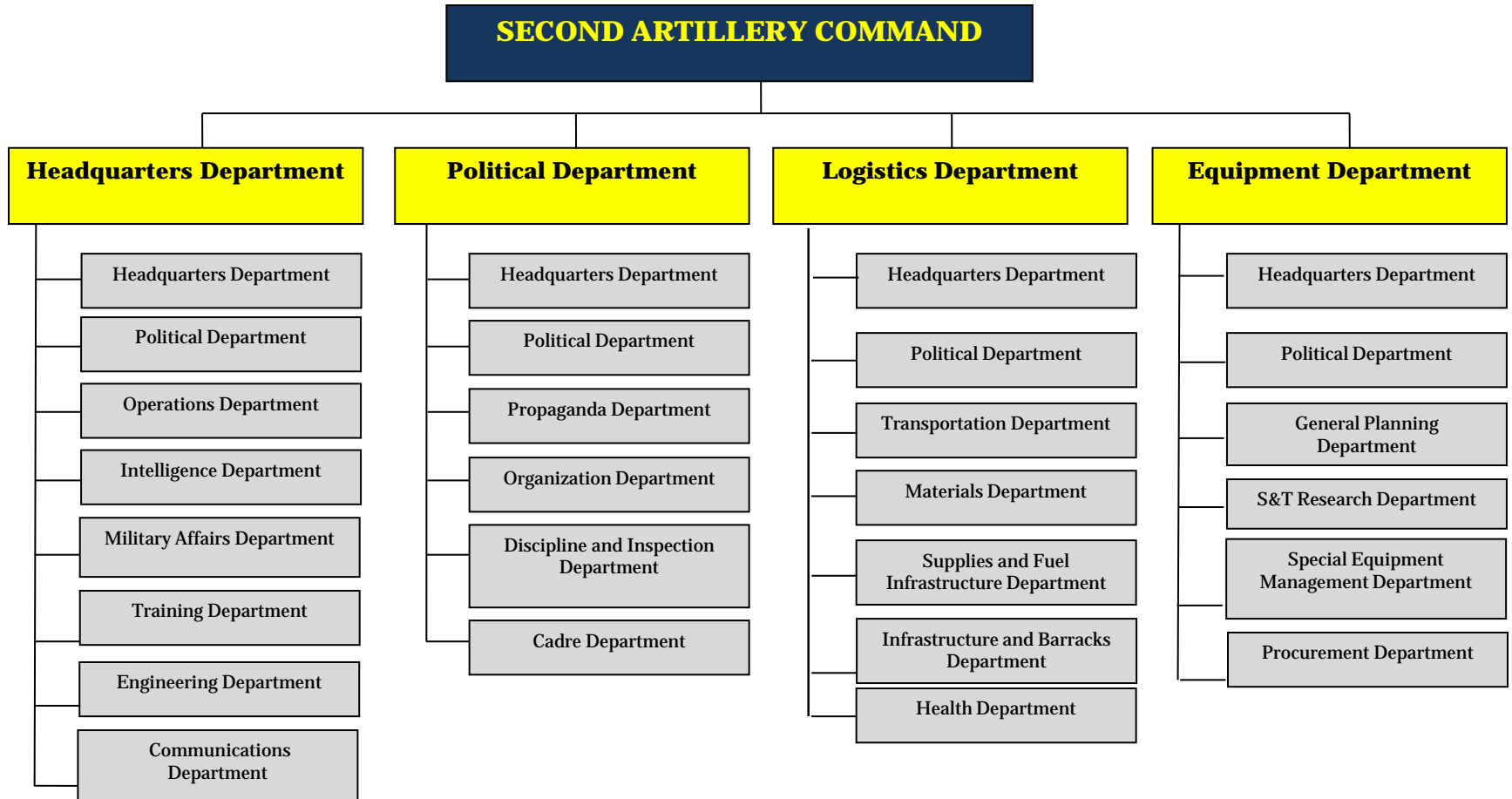
- Transportation
- Supplies and Fuel
- Infrastructure/Barracks
- Budget

Equipment Department

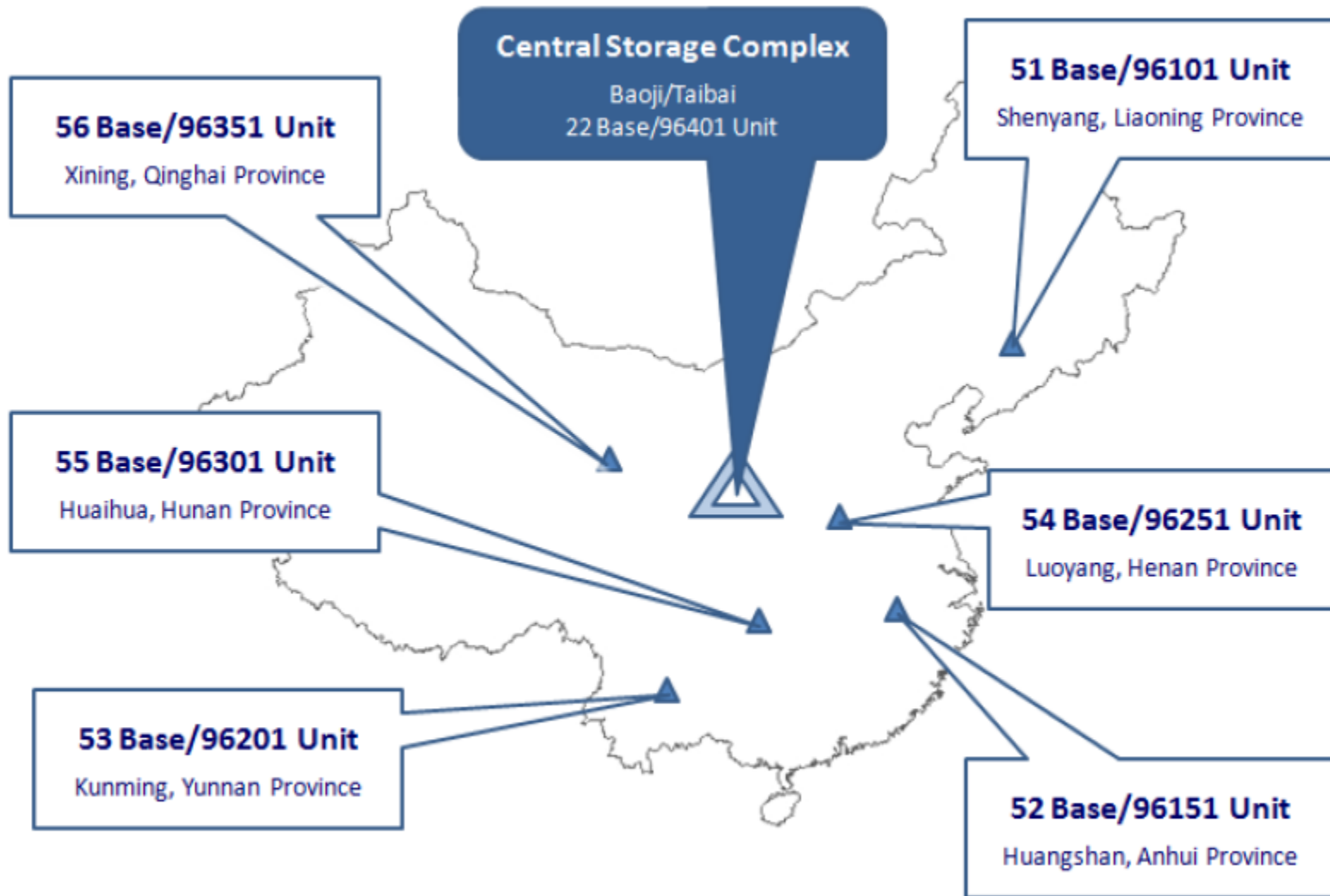
- S&T Research
- Special Equipment Management
- Procurement
- Equipment Research Academy
 - At least five subordinate research institutes

Second Artillery General Headquarters

Organizational Structure



Baseline Nuclear Force Structure



SECOND ARTILLERY BASE-LEVEL

ORGANIZATIONAL STRUCTURE

Commander

- Three Deputy Commanders

Political Commissar

- Three Deputy Political Commissars

Base-Level Support Units

- Training Regiment
- Transportation Regiment
- Warhead Regiment
- Ground Equipment Repair Regiment
- Communications Regiment
- Missile Depot Regiment (selected)

Launch Brigades

- Six launch battalions, two companies each
- Communications Battalion
- Technical Battalion
- Site Management Battalion

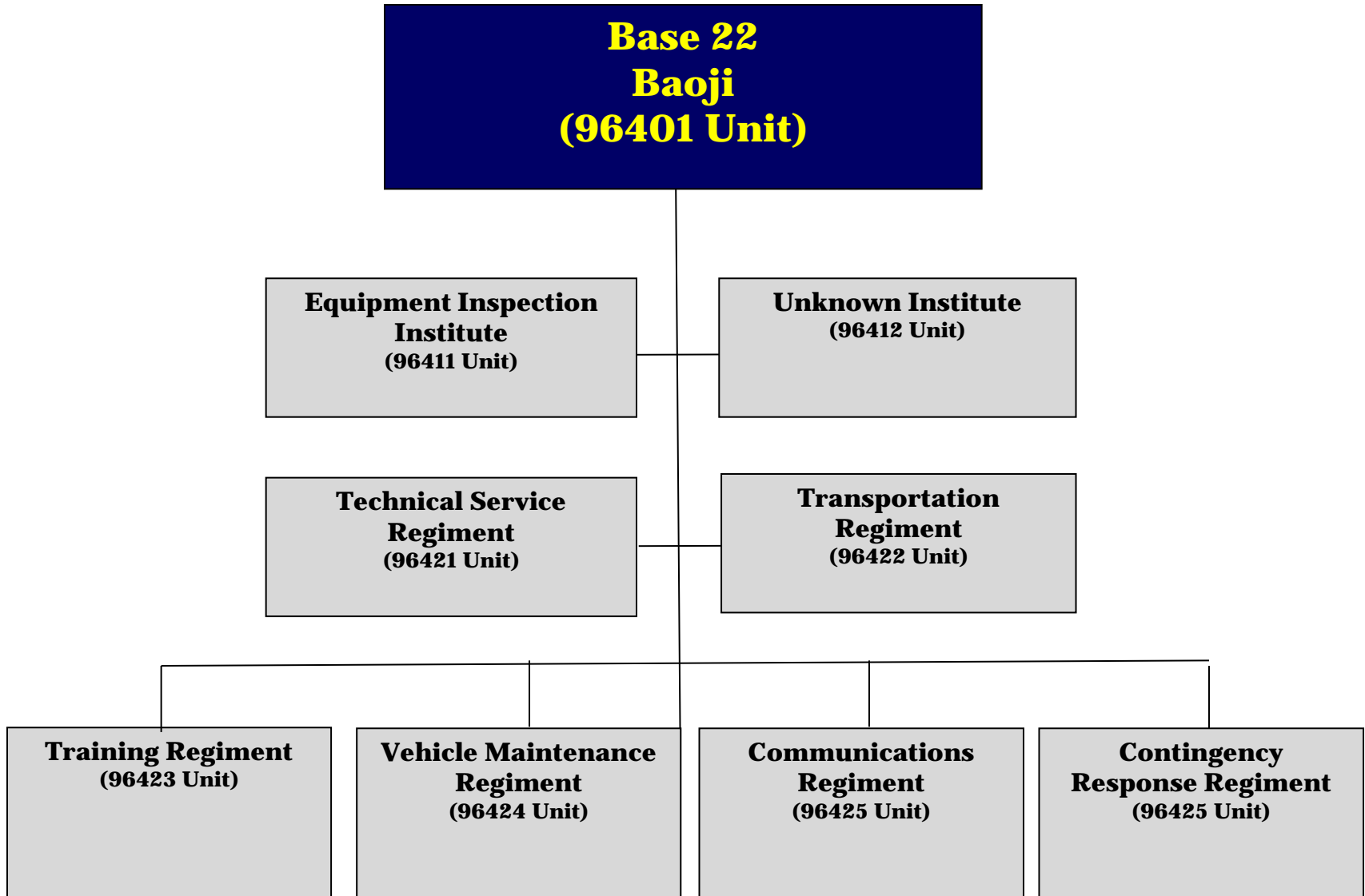
Base Headquarters Staff

- Headquarters Department
- Political Department
- Logistics Department
- Equipment Department

Taibai Central Warhead Storage Complex* *(22 Base)*

- Warhead Inspection Brigade
- Munitions Inspection Regiment
- Warhead Storage Regiment
- Transportation Regiment
- Training Regiment
- Repair Regiment
- Communications Regiment

* *Possible function as alternate national command center*



Baseline Nuclear Force Structure

Base 51

- 806 Brigade (Hancheng; prob DF-31)
- 810 Brigade (Jinzhou; poss mixed)
- 816 Brigade (Tonghua; prob DF-21)
- 822 Brigade (Laiwu; DF-21C)

Base 53

- 802 Brigade (Jianshui; prob DF-21)
- 808 Brigade (Yuxi; poss DF-31)
- 8XX Brigade (Qingyuan; poss DF-21)

Base 55

- 803 Brigade (Jingzhou; prob DF-5)
- 805 Brigade (Shaoyang; prob DF-31)
- 814 Brigade (Huitong; prob DF-4)

North Sea Fleet First Submarine Base

Two Type 094 (12 tubes each)

Base 52

- 807 Brigade (Chizhou; prob DF-21)
- 811 Brigade (Qimen; prob DF-21)

Base 54

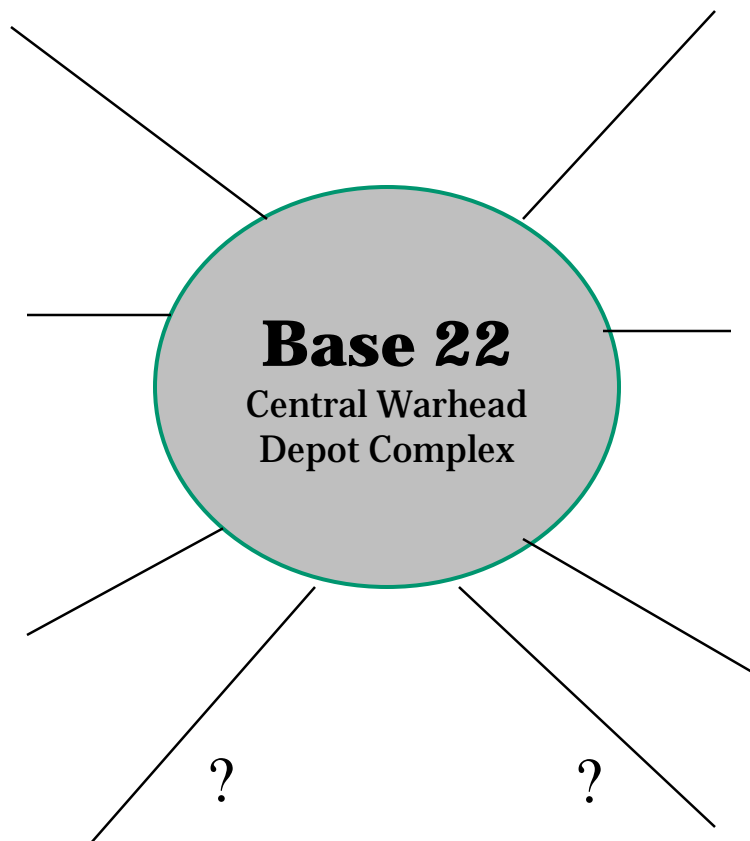
- 801 Brigade (Lingbao; prob DF-5B)
- 804 Brigade (Luanchuan; prob mixed)
- 813 Brigade (Nanyang; prob DF-31)
- 8XX Brigade (Xinyang; OT&E unit for new system)

Base 56

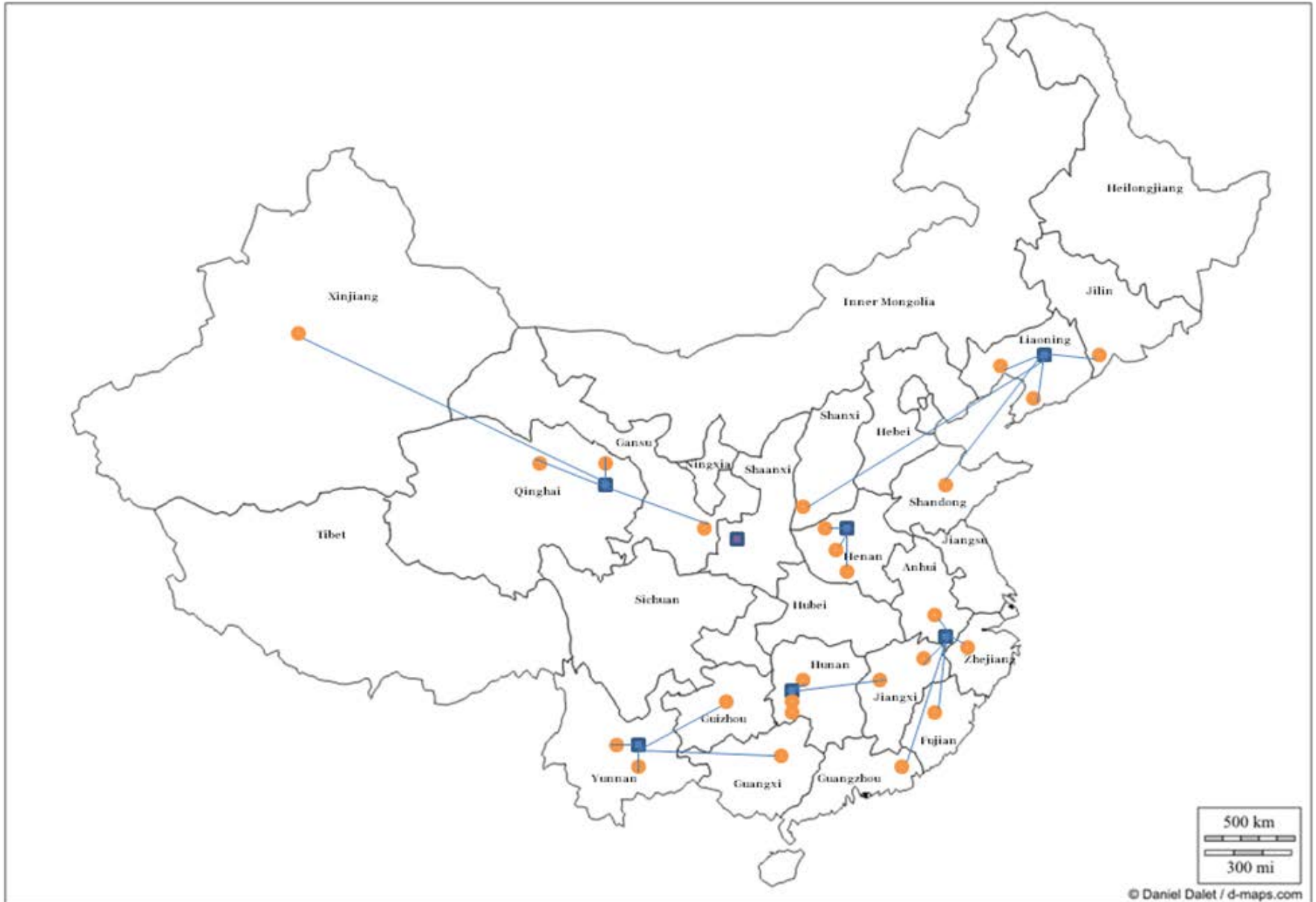
- 809 Brigade (Datong; poss DF-31)
- 812 Brigade (Tianshui; DF-31A)
- 823 Brigade (Kurle; prob DF-21)

South Sea Fleet Second Submarine Base

Two Type 094 (12 tubes each)

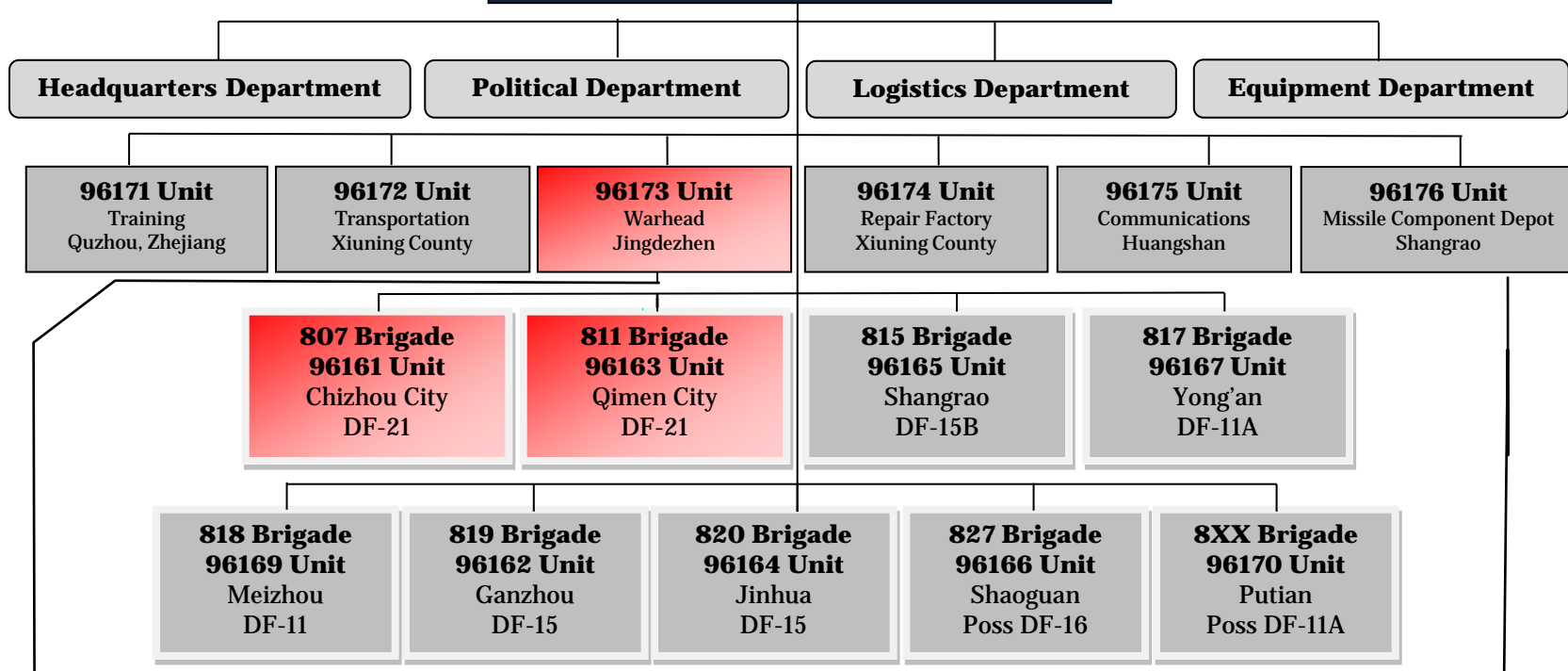


SECOND ARTILLERY INFRASTRUCTURE



Missile Base Organization and Baseline Force Structure

52 Base 96151 Unit Huangshan, Anhui Province



Nuclear

- Six launch battalions per brigade
- Two launch companies per battalion (12 companies per brigade)
 - One launcher assigned to each launch company
 - At least one missile/nuclear warhead programmed and available for each launcher
- At least 12 missiles and 12 nuclear warheads **notionally programmed and available** for each nuclear-capable brigade

Conventional

- Six launch battalions under brigade
- Two launch companies per battalion (12 companies per brigade)
 - Three launchers per launch company
 - At least one missile/conventional warhead programmed and available for each launcher
- At least 36 missiles/conventional warheads notionally available per brigade
- Reporting of 1000+ conventional SRBMs available for six brigades

- Political “Rush to Parity?”
- Bureaucratic politics/military parochialism?
- Defense industry push?
- Threat perception, calculated deterrence/counter-coercion, and/or doctrinal shift?
- Technology push?

- Second Artillery Equipment Department manages missile system acquisition programs based on broad CMC and General Armaments Department (GAD) policy guidance
- Five-seven research institutes under Second Artillery Equipment Research Academy responsible for conceptual design, program validation, proof of concept, etc
 - Second Research Institute appears to be responsible for warhead-related electronic components and safety issues
 - New strategic planning office
 - Defense industry military representative system
 - Role of operational test and evaluation (OT&E) units



中国航天

Defense Industrial Engineering R&D System



CASC First Academy Design Department

- Large solid motors: CASC Fourth Academy
- **Nuclear Warhead:** CAEP
- Re-entry vehicle structures: CASC First Academy 14th RI
- Guidance, nav, control system: CASC First Academy 12th RI
- Final Assembly: CASC First Academy 211 Factory

CASIC Fourth Academy Design Department

- Medium-diameter solid motors: CASIC Sixth Academy or 066 Base
- **Nuclear Warhead:** CAEP
- Re-entry vehicle structures: CASC First Academy 14th RI
- Guidance, nav, control system: CASIC Fourth Academy 17th RI
- Final Assembly: CASIC Fourth Academy 307 Factory

- GAD oversees technology development and manages acquisition of nuclear warheads as a major missile sub-system
- GAD S&T Committee as senior CMC advisory group on defense technology
 - S&T Committee director carries grade equal to a military region leader
 - GAD S&T Committee Expert Working Groups:
 - Nuclear weapons technology
 - Testing technology
 - Nuclear safety
- 863 Program Expert Working Groups
 - 863-804: Inertial Confinement Fusion
- GAD Services Department
 - Second Artillery Bureau (Nuclear Technology Bureau)
- GAD 21 Base (63650 Unit; Malan Special Weapons Test Base)
 - Northwest Institute of Nuclear Technology

Academies

- Roughly analogous to a US corporate business division

Design departments

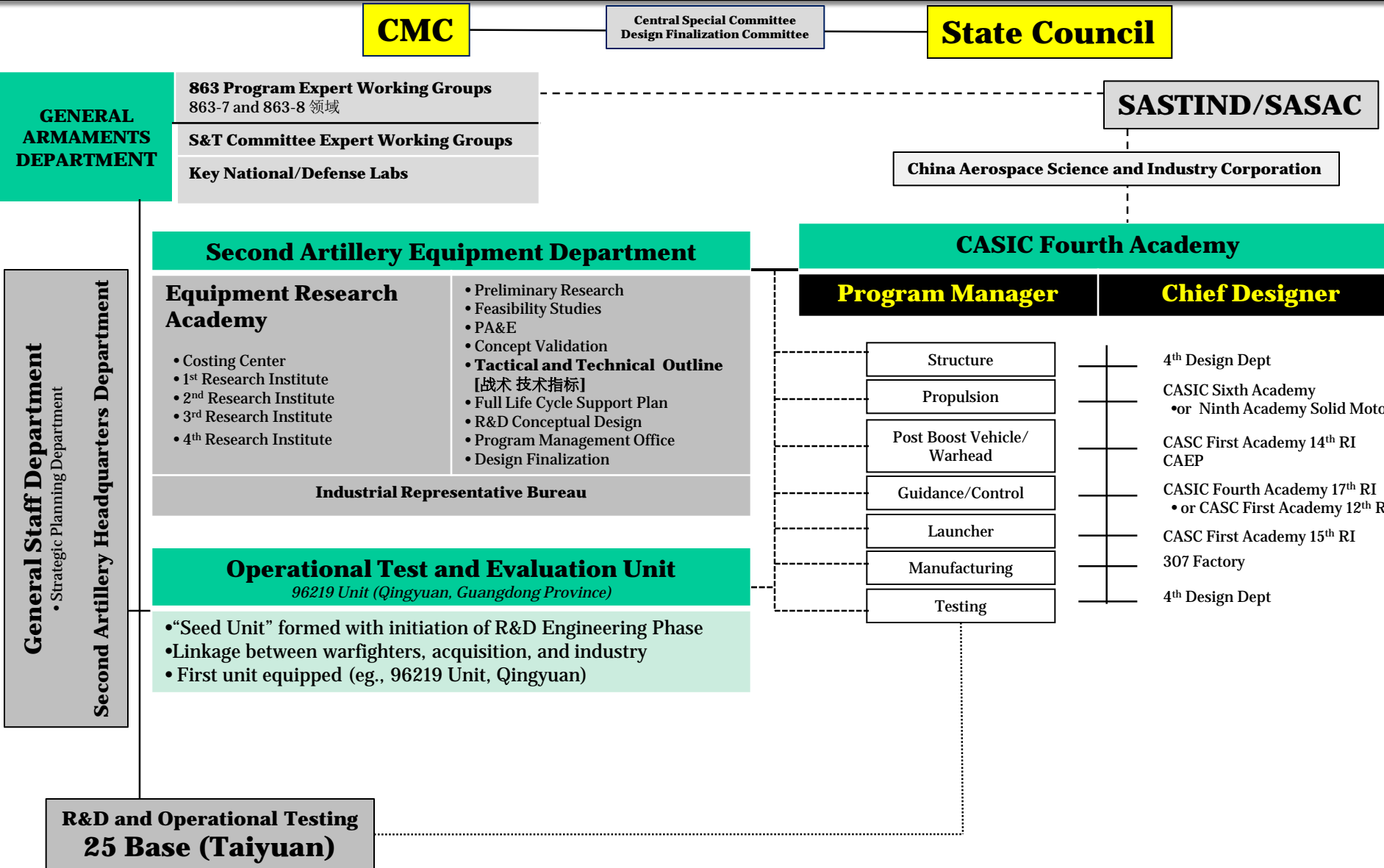
- Systems integration responsibilities

Research institutes

- Sub-systems, sub-assemblies, components, and materials

Factories

- Manufacturing and assembly



Warhead Engineering R&D and Production Infrastructure

CMC

State Council

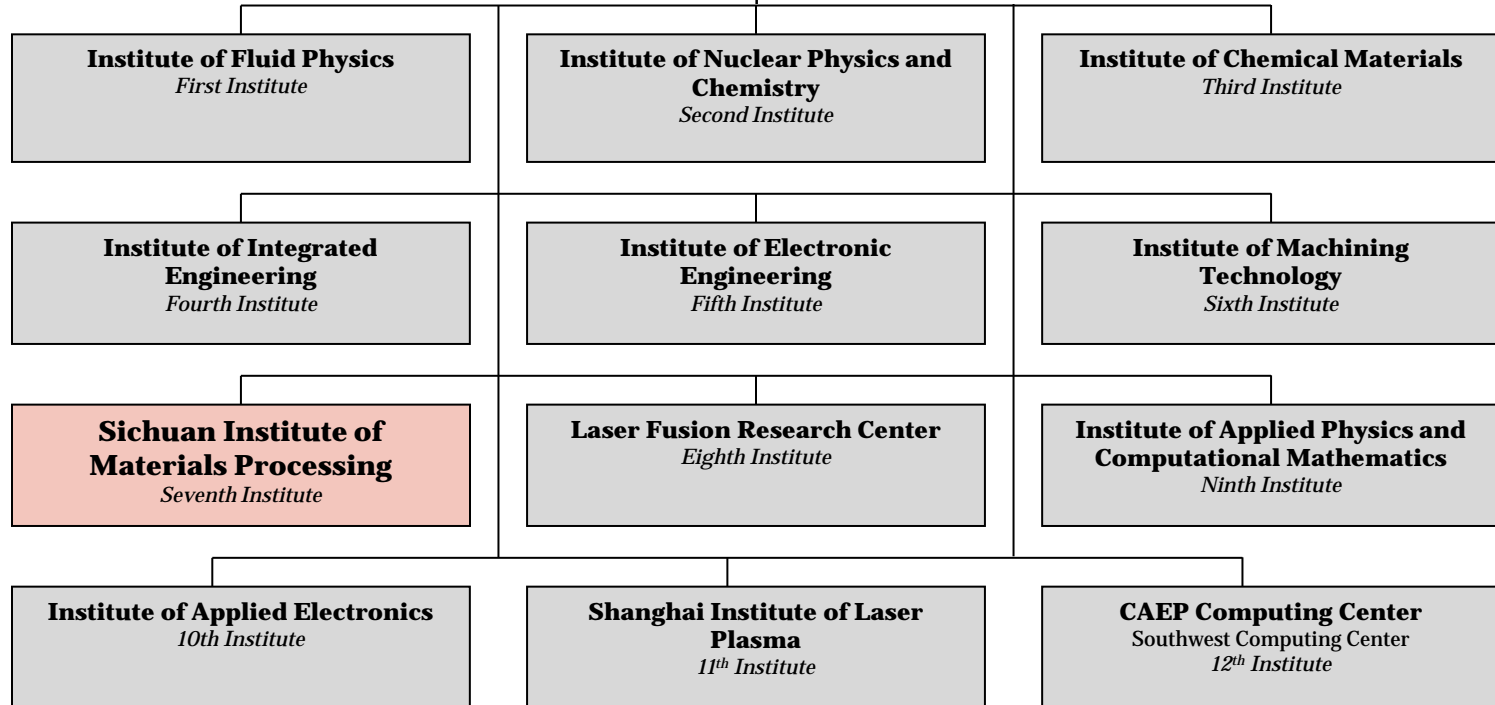
CHINA ACADEMY OF ENGINEERING PHYSICS

Party Committee

- General Office
- Integrated Planning Department
- S&T Department
- Personnel Training Department
- People's Armed Department
- Propaganda Department
- Technical Supervision Department

S&T Committee

- Engineering Department
- Beijing Graduate Student Department
- Material Department
- Defense Conversion Department
- Public Affairs Management Department
- S&T Information Center



Military Representative Offices

- **Expansion of operational infrastructure**
 - Current conventional force structure as model: three launchers per company
 - Limited number of new brigades equipped with mobile MIRV'd ICBM
 - Expansion and delegation of warhead storage and handling responsibilities to base level
 - Base 22 as reserve depot
- **Expansion of missile (CASC/CASIC) and warhead (CAEP) final assembly plants (and supply chain)**
 - CASC 211 Factory/CASIC 307 Factory
 - CAEP Sichuan Institute of Materials Processing (Seventh Institute/903 Factory)
- **Larger arsenal = greater transparency?**

Extended range dual capable ballistic and land attack cruise missiles

- Expanded range variants of DF-21C and/or new model

Navy and Air Force Nuclear Capabilities

- Air- and possible sub-launched land attack cruise missiles
- Type 094 sub and JL-2 SLBM: who controls the warheads?
- Future PLA “Strategic Command?”

Increasingly complex missile defense countermeasures

- On-board jammers
- Hypersonic cruise vehicles
- Reduced radar cross section
- Maneuvering re-entry vehicles

Greater lethality

- Fourth generation nuclear weapons
- Tailored warheads for hard and/or deeply buried targets
- High powered microwave or other radiofrequency warhead

Multiple independently targetable reentry vehicles (MIRVs)

- Probable MIRV variant of silo-based DF-5 (DF-5B)
- Possible new solid fueled, road mobile intercontinental ballistic missile