



New AREVA: Reliable Integrated European supplier

Jérôme SERMAGE

*Deputy Vice President Mining & Front End Sales
Senior Sales Manager, Europe Middle East Africa*

Bulatom Conference

Varna, June 7, 2017



Mining Chemistry Enrichment activities

Uranium
(U_3O_8)



Conversion
Services
(UF_6)

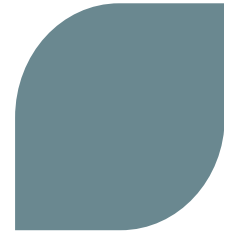


Enrichment
Services
(EUP)



Mature markets at the Utilities' service

Worldwide capacities (from WNA 2016 report)



✓ **Uranium: About 55,000 tU produced in 2015**



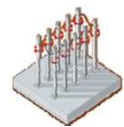
- Five continents concerned with Uranium production
- Plus some secondary resources to equilibrate the market ~13,000 tU
- Utilities hold about 160,000 tU as strategic reserve end of 2014

✓ **Conversion services: About 59,000 tU/UF6 of nameplate capacity end 2015**



- Conversion sites with new investments in China, France and Russia
- Same secondary supply available as for Uranium

✓ **Enrichment services: About 55 MSWU* of nameplate capacity end 2015**



- A sole technology on the market: centrifugation
- This technology bring modular and adaptable capacities
- Using underfeeding operations, Enrichers are also on the UF6 segment

*Million of Separative Work Unit



Focus on Mining

AREVA's Operating Mines Today

5 sites in 3 countries and on 3 continents

2016

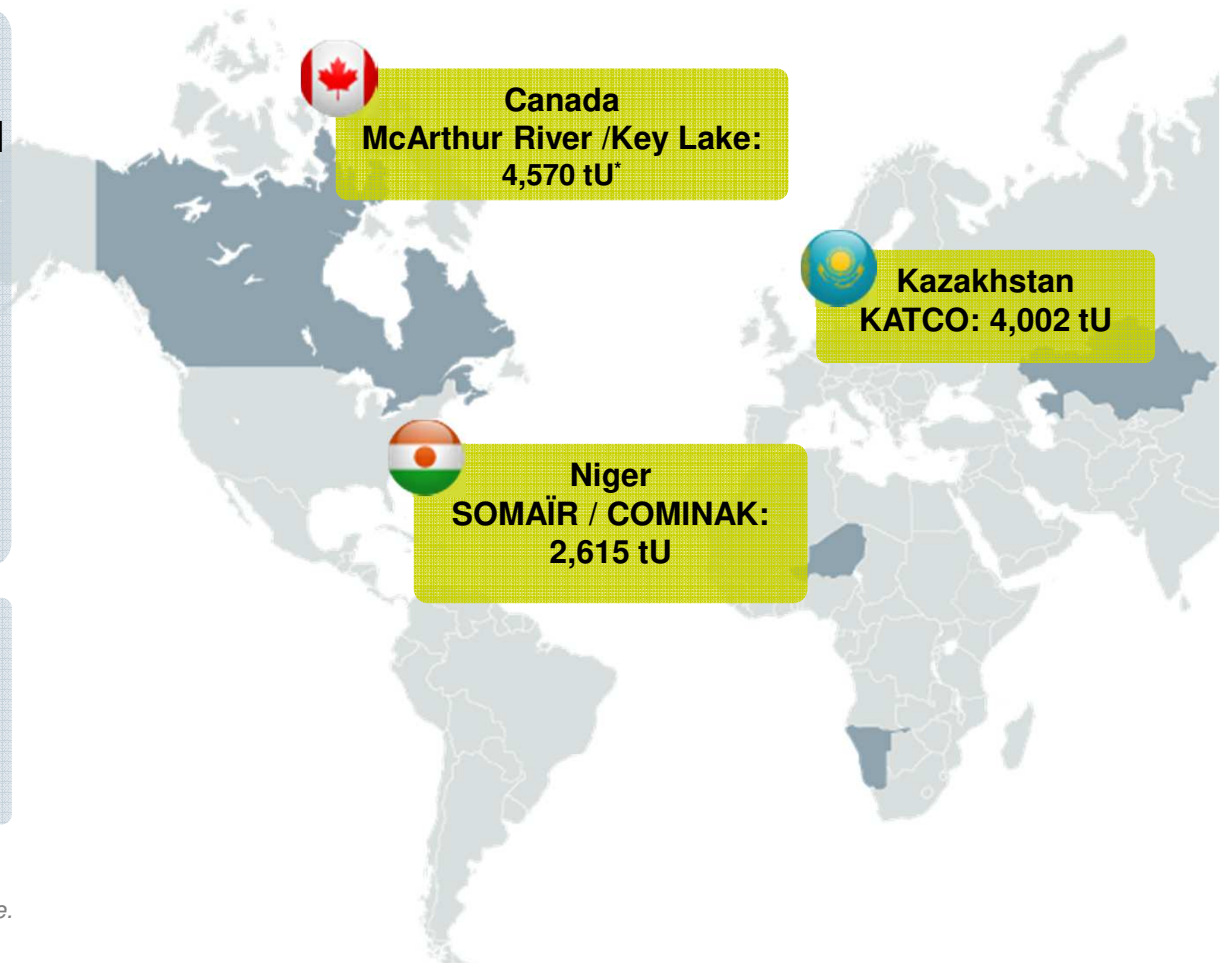
- 11,186 tU have been produced in 2016 and all sites have met their production objectives

(AREVA's consolidated financial share)

- Diversified production:**
3 countries with
4 mines in operation

Cigar Lake / Mc Clean

Ramp-up success achieving
4,350 tU



*Operated by CAMECO: AREVA's consolidated financial share.

➤ **Diversification to reduce political risks**

AREVA adapts its portfolio to market conditions




Sites in operation


 **Niger**
SOMAÏR
COMINAK

 **Canada**
Cigar Lake / McClean
Lake
Mine: Cameco
Mill: AREVA
McArthur
Operator: Cameco

 **Kazakhstan**
KATCO

Projects in portfolio


 **Niger**
Imouraren


 **Namibia**
Trekopje

Continue exploration in the most promising regions of the world

 **Canada**
Kiggavik
McClean
underground
Midwest
Shea Creek

 **Australia**

 **Gabon**

 **Mongolia**



- Ensure the ramp-up of Cigar Lake
- Optimization of production costs thanks to performance improvements

- Care & maintenance program due to the market conditions

- Depends on market conditions
- Project portfolios remains “active” (investment limited to studies) so they are ready for sustainable market recovery

Our Strategic Priorities



- ▶ **Be leading in matters of safety, health, and social and environmental responsibility**
 - ▶ **Profitability aligned with the best industry standards**
 - ▶ **Have at least 20 years of production ahead of us in reserves and weighted resources**
 - ▶ **A promising portfolio of projects** geographically diversified (Canada, Niger, Kazakhstan, Mongolia...)
-
- **Offering security of supply to AREVA's customers and contributing to the group's performance**



Focus on Conversion and Enrichment

Tricastin-Malvési : an integrated industrial platform with state-of-the art technologies



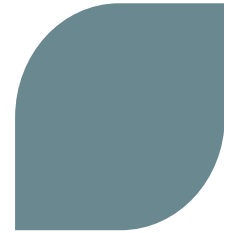
► Conversion

- ◆ Comurhex II (Malvési in 2016, Tricastin in 2018)
 - Nominal capacity : 15,000 tU/y
 - The only conversion facilities being renewed, implementing innovative process
 - Processing all forms of concentrates
 - Single European storage facility for concentrates
 - Latest nuclear safety requirements met : increased seismic resistance (heavy concrete walls...), confinement workshop, flooding resistance...
 - Reduced environmental footprint : ammonia -75%, nitric acid -50%, industrial water -90%



**Services delivered for 50 years without any disruption:
more than 450,000 tU/UF6**

Tricastin-Malvési : an integrated industrial platform with state-of-the art technologies



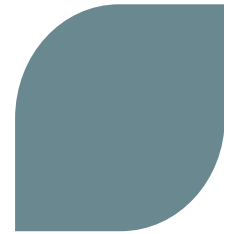
► Enrichment

- ◆ Georges Besse II (Tricastin, 7,5 MUTS reached in 2016)
 - The largest enrichment facility in Europe
 - The most efficient & competitive proven technology
 - Latest nuclear safety requirements met:
increased seismic resistance, confinement workshop...
 - Reduced environmental footprint : energy consumption divided by 50, water consumption -100%



**Services delivered for 50 years without any disruption:
more than 250 Mio SWU**

Tricastin-Malvési : an integrated industrial platform with state-of-the art technologies



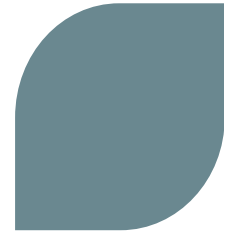
► Unique assets and experience on front-end activities

- ◆ backed by strong backlog
- ◆ State-of-the art technologies and modernized facilities
- ◆ Uncompromising culture of industrial & occupational safety (Safety First)
- ◆ Even more reduced environmental footprint
- ◆ Deliveries EUP in the world
- ◆ with unparalleled expertise and portfolio
- ◆ A European safe location and storage area
- ◆ Recognized industrial expertise
- ◆ Teams renowned for their skills, commitment and ability to succeed
- ◆ A more integrated and efficient platform (mitigation of transportation risk, notification time reduction...)



**Providing a high security of supply
for front-end products and services on the long run**

Conclusions



- ▶ **AREVA Front End has a long record of Worldwide recognized experience**
 - ◆ 3 standards products identified by common standard (ASTM) with fungibility allowing logistic optimization
 - ◆ They always have been delivered on time

- ▶ **AREVA invests for the long term in Safety/Security and for AREVA customer's Security of Supply**
 - ◆ Uranium Mining activity with 20% Worldwide production: 5 mines on 3 continents
 - ◆ Tricastin hosting AREVA Conversion and Enrichment capacities: 20% and 15% respectively

- ▶ **AREVA delivers nuclear material to others reactors technology**
 - ◆ Uranium and reprocessed uranium to AGR, VVER, CANDU and alike
 - ◆ EUP delivered in all Fuel fabrication plant in the world