

Operating experience of Russian nuclear fuel at Slovak NPPs and prospects of implementation of new types of fuel

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Short history of Slovak NPPs

NPP Bohunice, Units 3 and 4



| Unit | Start-up | Power up-rating |
|--------|----------|--|
| Unit 3 | 1984 | 104% $N_{nom.}$ (2008), 105% $N_{nom.}$ (2009), 107% $N_{nom.}$ (2010) |
| Unit 4 | 1985 | 105% $N_{nom.}$ (2009), 107% $N_{nom.}$ (2010) |

Short history of Slovak NPPs

NPP Mochovce, Units 1 and 2



| Unit | Start-up | Power up-rating |
|--------|----------|------------------------|
| Unit 1 | 1998 | 107% $N_{nom.}$ (2008) |
| Unit 2 | 2000 | 107% $N_{nom.}$ (2008) |

Nuclear Fuel at Slovak NPPs

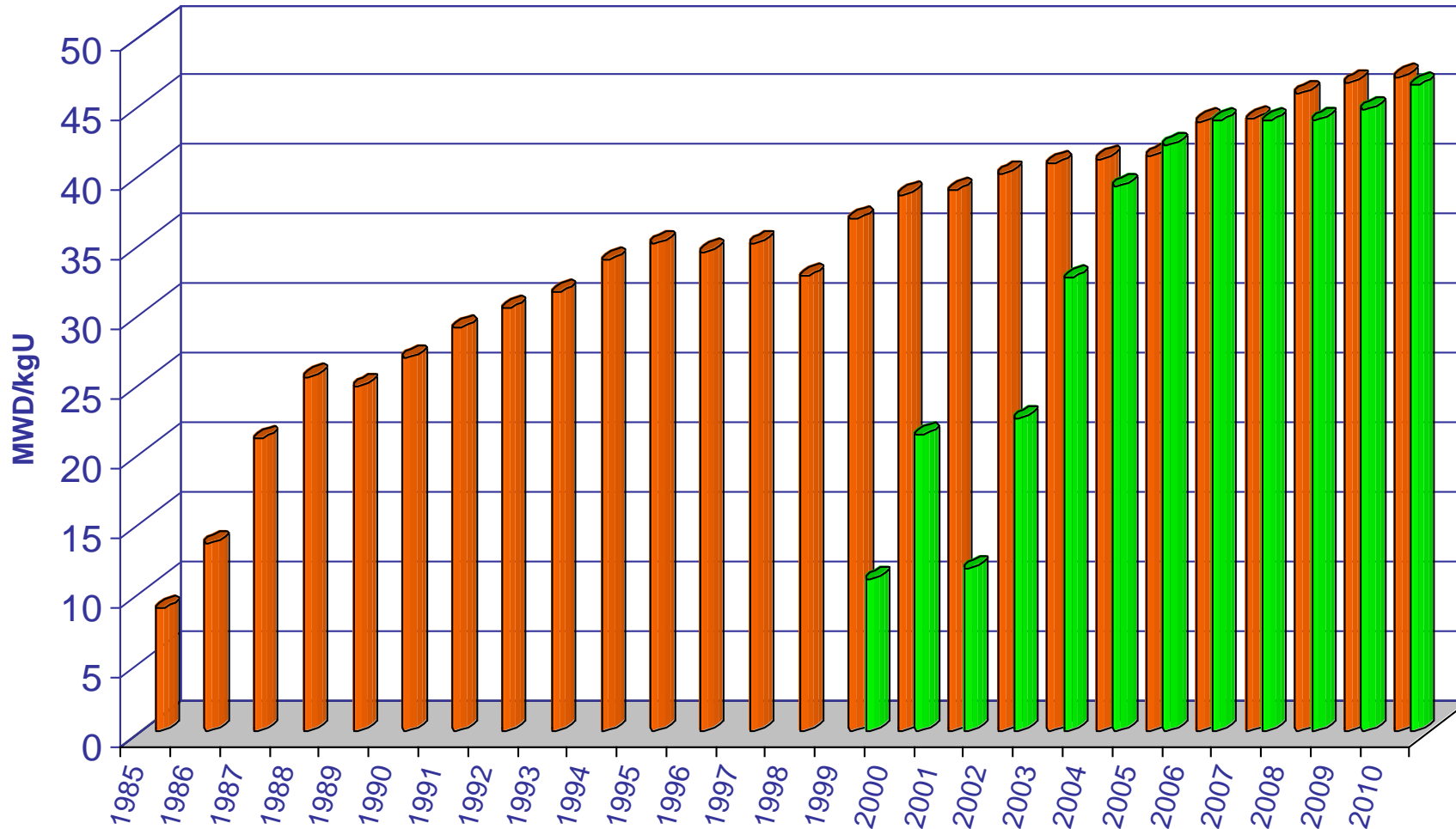
Fresh Nuclear Fuel Reloads

| | Unit start-up | Unprofiled 3,6%/RB size | Profiled 3,82%/RB size | Gd II 4,25%/RB size | Gd II 4,87%/RB size |
|---------------------------------|----------------------|------------------------------------|-----------------------------------|--------------------------------|--------------------------------|
| EBO 3 | 1984 | 114/121 | 2002/72-78 | 2006/66-78 | 2012/66 |
| EBO 4 | 1985 | 114/121 | 2002/72-78 | 2006/66-78 | 2012/66 |
| EMO 1 | 1998 | 114/121 | 1999/78-84 | 2006/66-78 | 2011/66 |
| EMO 2 | 2000 | 114/121 | 2001/78-84 | 2006/66-78 | 2011/66 |
| EMO 3 | 2012 | Initial core | - | - | 2014/60 |
| EMO 4 | 2013 | Initial core | - | - | 2014/60 |
| Service life [years] | | 3-4 | 5 | 5-6 | 6-7 |
| Warranted Burn-up [MWd/kgU] | | 38,0 | 45,0 | 48-52,6 | 57-66 |
| Fuel cycle length [eff.days] | | 280 | 280-300 | 306-318 | 330 |

RB size = Reload Batch size

Nuclear Fuel at Slovak NPPs

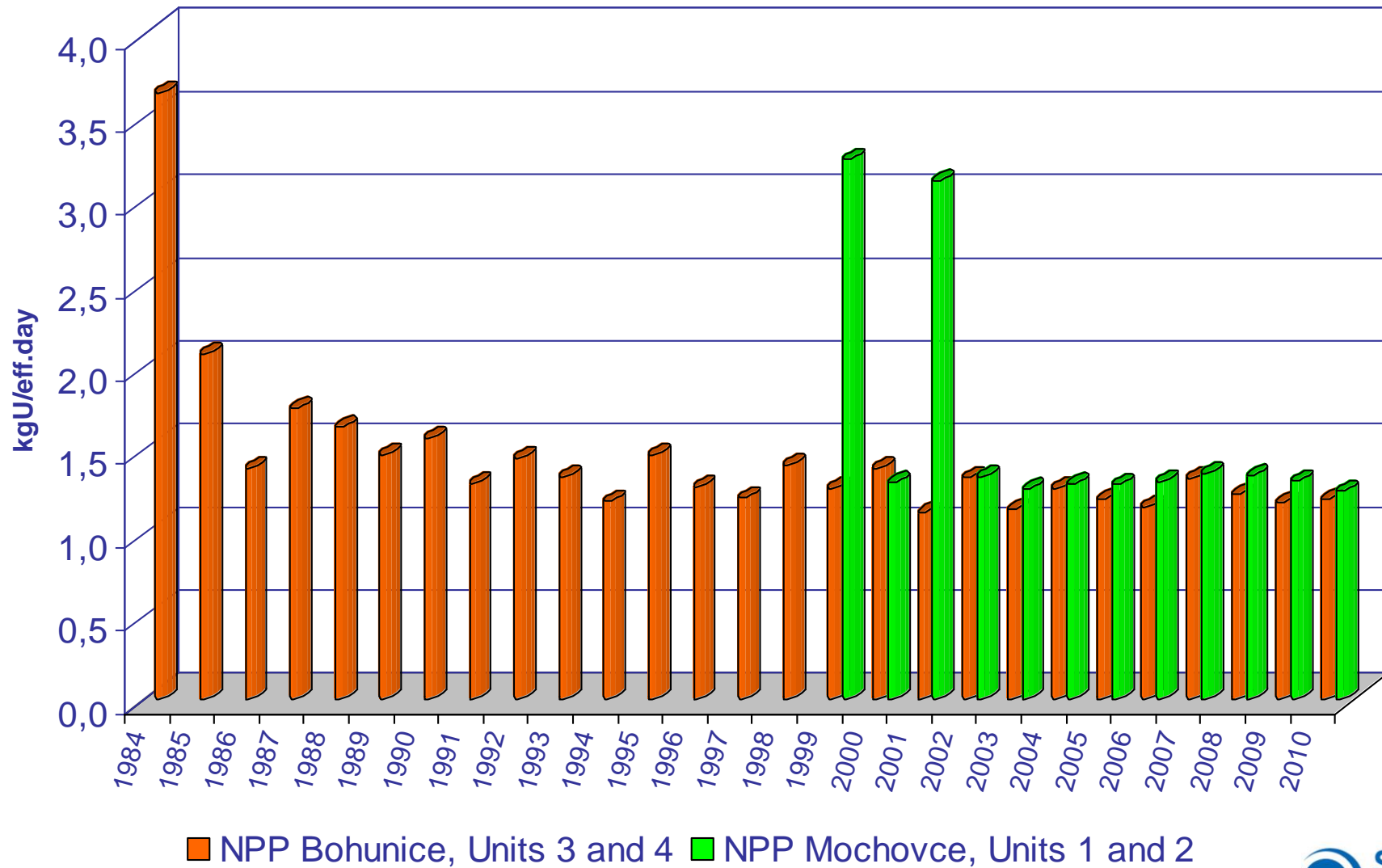
Average Burn-up



■ NPP Bohunice, Units 3 and 4 ■ NPP Mochovce, Units 1 and 2

Nuclear Fuel at Slovak NPPs

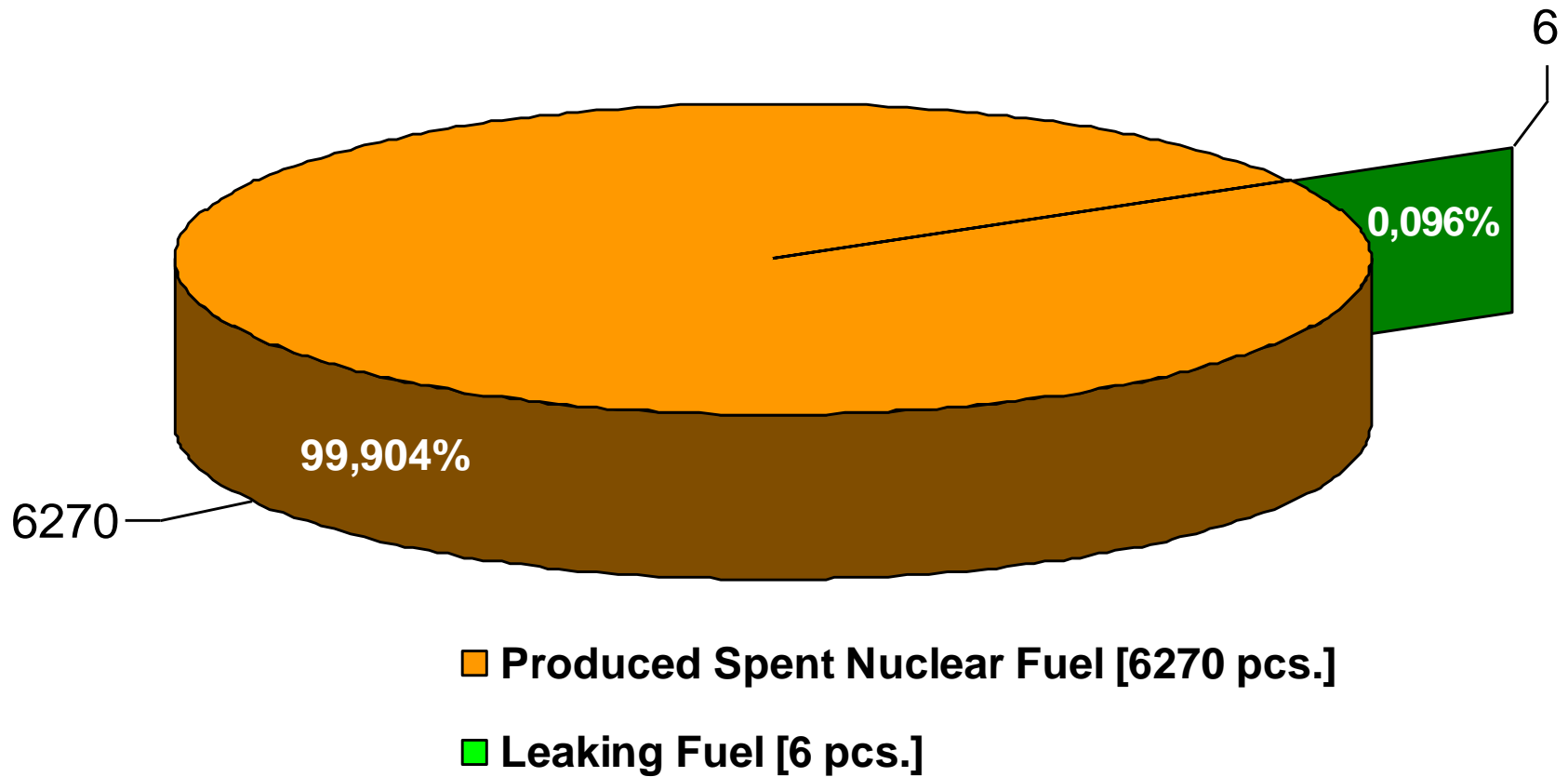
Uranium Consumption



■ NPP Bohunice, Units 3 and 4 ■ NPP Mochovce, Units 1 and 2

Nuclear Fuel at Slovak NPPs

Fuel Leakage Rate



Nuclear Fuel at Slovak NPPs

Conclusions

- **Nuclear fuel is reliable in operation**
- **Fuel supplies are stable and in time**
- **Technical support is reasonable and adequate**
- **Development of new fuel designs is challenging but promising**

Nuclear Fuel at Slovak NPPs

- **Thank you for your attention!**