MULTILATERAL VERIFICATION OF NUCLEAR DISARMAMENT

2011-2015

International Partnership on Nuclear Disarmament Verification, Oslo, Norway

November 2015
VERTIC AND DISARMAMENT VERIFICATION

- **1986**: Founded; headquartered in London.
- **1993**: Pioneered use of USGS NEIC data to detect nuclear testing (as an NGO IDC).
- **1996**: W. Alton Jones supports the ‘Getting to Zero’ project.
- **2000**: Series of **AWE** studies on disarmament verification for NPT review conference gets extensive verification yearbook coverage.
- **2006**: Facilitates first meetings between UK and Norway. Participates as an observer in the subsequent UK-Norway Initiative until 2010.
- **2011**: Starts project on multilateral verification of nuclear disarmament.
OTHER VERTIC ACTIVITIES

VERIFICATION
Promoting the implementation of IAEA safeguards.
Development of a bespoke safeguards database, presented in Japan last week.
CBRN research exchange with China.
Smaller projects on cyber security and the environment.

IMPLEMENTATION
Leading assistance provider on the Biological Weapons Convention.
“The most prolific and efficient legislative assistance provider in the world in areas related to [UNSCR1540]” (according to forthcoming monograph).
Established assistance provider on other CBRN issues.
INCREASING TREND TOWARDS MULTILATERAL R&D

1967  Project CLOUD GAP: prepared for a NNWS inspectorate.

1996  The Trilateral initiative: a joint research and development venture between the US, Russia and the IAEA starts work.

1997  US transparency and verification options study (NON-CLEARED inspectors).


2005  Series of AWE studies on disarmament verification for NPT review conference. The final report, NPT/2005/WP.1, refers to non-security cleared personnel.

2006  UK-Norway Initiative commences.

THE MVD PROJECT

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<tr>
<th>WHO</th>
<th>53 researchers from governmental and non-governmental institutes on four continents. Mostly drawn from technically proficient non-nuclear weapon states, with representation from one intergovernmental organisation.</th>
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<td>WHY</td>
<td>Identify the tools, organisational structures and procedures that should enable a multilateral body to carry out disarmament verification effectively and credibly. Educate and train a growing cadre of stakeholders in the challenges and opportunities presented by multilateral disarmament verification.</td>
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<td>HOW</td>
<td>Two closed meetings per year, comprising full membership. Research groups which meet when necessary. Continuous supporting research conducted by VERTIC.</td>
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THE MVD PROJECT (CONT.)

WHEN

'11-'15 Consolidation of group, formulation and organisation of the research, construction of simulation framework, examination of demand.

'16-'18 Proposed: Running three major simulations; expanding outreach to broader NWS/NNWS community; iterative development of research products (tools and procedures).

'19-'21 Planned: Peer-review, finalisation and publication of final research products (tools and procedures).
FACILITATING CAPACITY BUILDING AND GENERATING DEBATE

Aims

Encourage an inclusive and reinvigorated international debate; and
Build technical capacity to contribute to verification.

'11-'15
Three conferences.
Five seminars.
Five conclaves.

'16-'18
Two conferences.
Nine seminars.
Two regional hubs.
Three conclaves.
INVESTIGATING SUPPORT FOR MULTILATERALISM

**Source**  
Member State Views on an IAEA Role in Verifying Nuclear Disarmament, *Verification Matters no. 10*, September 2015.

<39%  
Proportion of IAEA member states willing to contribute funding to ventures such as the IPNDV.

<77%  
Proportion of IAEA member states willing to contribute expertise to ventures such as the IPNDV.

>61%  
Proportion of IAEA member states that may support an IAEA ‘long-term plan’ specifying roles, capacity-building and resource requirements for nuclear disarmament verification.
DEVELOPING AN EQUIPMENT DEVELOPMENT AND PROCUREMENT STRATEGY

Aims:
[1] Build understanding of strengths and weaknesses of monitoring equipment for disarmament verification.
[2] Inform the research and development of monitoring equipment.

Methodology:
[2] Equipment technology reviews and ‘data sheets’.

Outputs:
‘16-‘18 Three iterative technology reviews for nuclear disarmament verification.
VERIFICATION SOLUTIONS


Problem Any detailed study on disarmament verification requires creating some 'boundary conditions' within which practical work can be conducted.

Solution Model. Scenario. Simulation.
VERIFICATION SOLUTIONS (MODEL)

A model is created by establishing a fictitious state, and tracing the development of its nuclear fuel cycle, both civilian and military, across its entire history.

Produces a representation of the imagined state’s nuclear infrastructure, materials and quantities of nuclear weapons at any given point in that history. Includes realistic and comprehensive data on mass flows and materials quantities.

Possible to supplement with 3D facilities, in more advanced simulations. Project developed a pre-alpha using Oculus rift.
VERIFICATION SOLUTIONS (SCENARIO)

Scenarios serve as the assumptions under which specific questions can be tackled and can be used to generate more data and information that can ground research in any specific sub-topic. Contains information on, for example:

[1] Who is disarming?
[2] Why are they disarming?
[3] Who are involved in verification?
[4] What are they verifying?
VERIFICATION SOLUTIONS (SIMULATION)

LEVEL 1  Exercise designed to tease out agreed commitments.

LEVEL 2  Exercise designed to define applicable verification principles.

LEVEL 3  Exercise designed to define general verification practices contained in a verification agreement.

LEVEL 4  Exercise designed to define detailed verification practices contained in a verification agreement.

LEVEL 5  Exercise designed to define facility and activity specific procedures.
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<th>Verification Solutions (Example Outputs)</th>
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<td>[1]</td>
<td>Develop an outline verification agreement that could become a foundation for a range of future nuclear disarmament verification activities.</td>
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<td>[2]</td>
<td>Develop a detailed verification agreement, including precise monitoring procedures and compliance processes, that could be applied to a specific disarmament activity.</td>
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<td>[3]</td>
<td>Explore the application of selected monitoring equipment for the verification of certain disarmament activities.</td>
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<td>[4]</td>
<td>Test the verifiability of existing disarmament agreements, or hypothetical agreements developed through other verification simulations.</td>
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<td>[5]</td>
<td>Train and build capability among the participants, and to pass on knowledge and expertise to emerging actors in the field.</td>
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FURTHER READING ON DISARMAMENT VERIFICATION

VERIFICATION MATTERS (IN-DEPTH REPORTS)

2009    VM9: exploring verified warhead dismantlement.
2015    VM10 and 11: exploring multilateral verification.
Today    VM12: methodology and exercise frameworks.

VERIFICATION BRIEFS (SUMMARY REPORTS)

2012    VB17: exploring new ideas regarding multilateral verification efforts.
2013    VB19: making the case for a multilateral R&D effort.