Application of VRdose® at Leningrad NPP

Application of VRdose® at Leningrad NPP
CASE 1 – The room with reactor coolant system piping

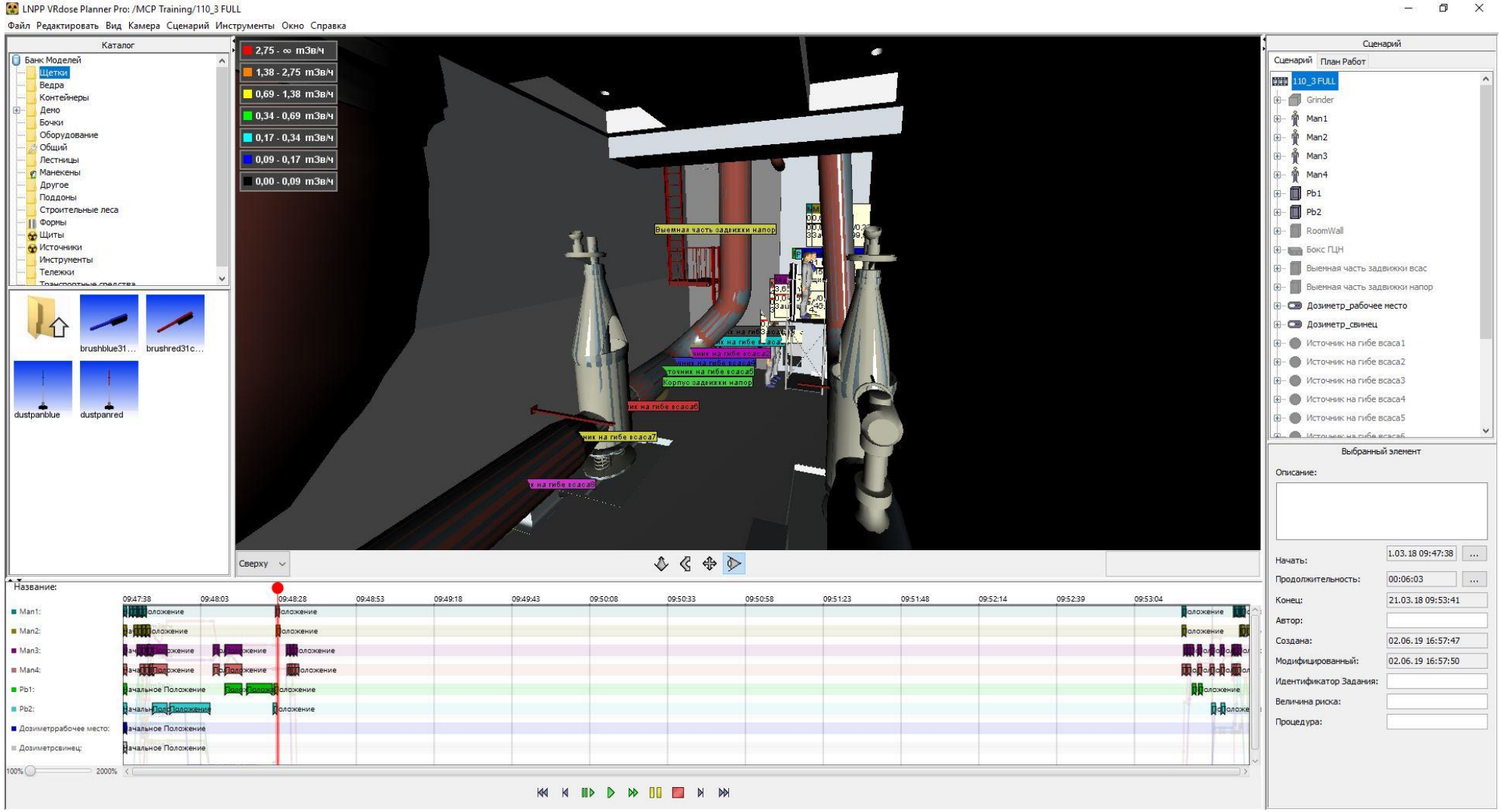


Fig.1 View of VRdose® main window

Application of VRdose® at Leningrad NPP
CASE 1 – The room with reactor coolant system piping

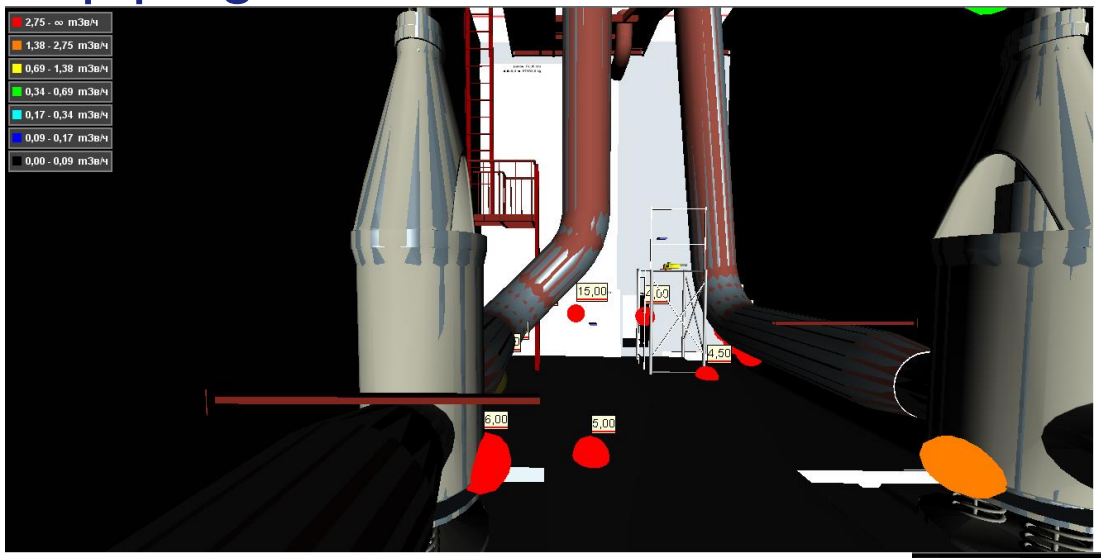


Fig.2 3D-view of the room with measurements data

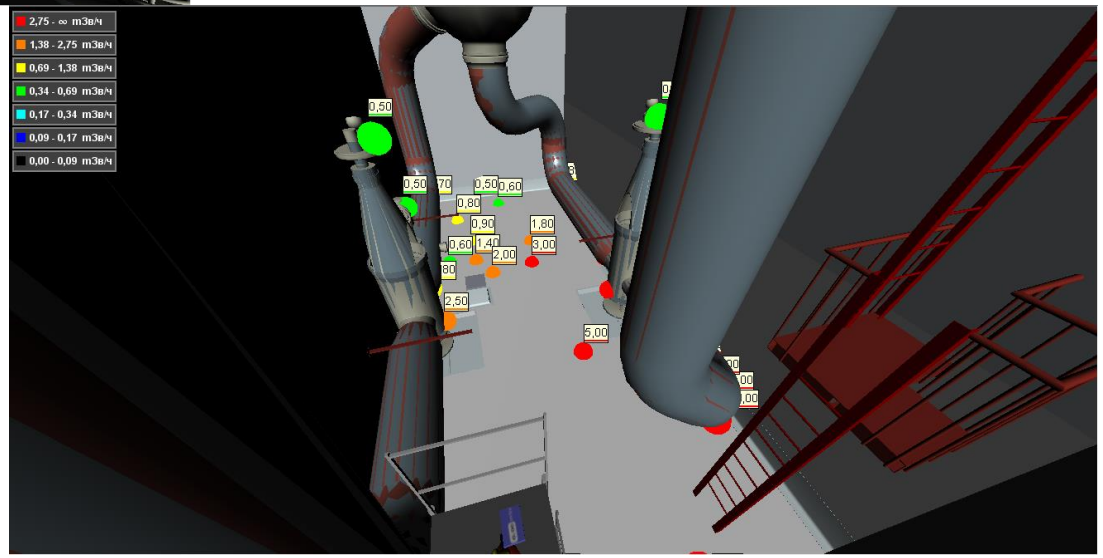


Fig.3 3D-view of the room with measurements data

Application of VRdose® at Leningrad NPP
CASE 1 – The room with reactor coolant system piping

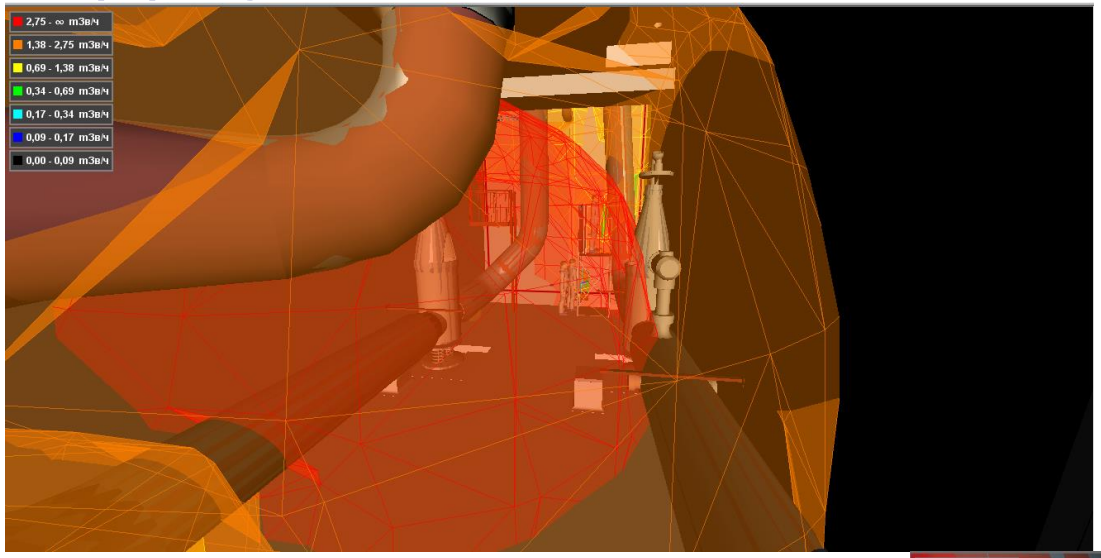


Fig.4 Distribution of gamma radiation field within the room

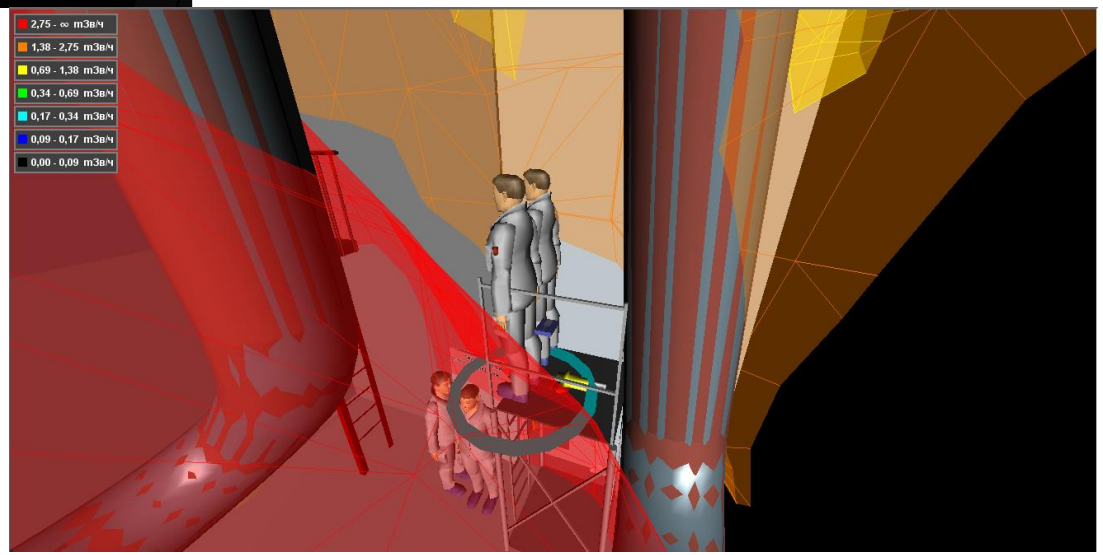


Fig.5 Distribution of gamma radiation field within working area

Application of VRdose® at Leningrad NPP
CASE 1 – The room with reactor coolant system piping

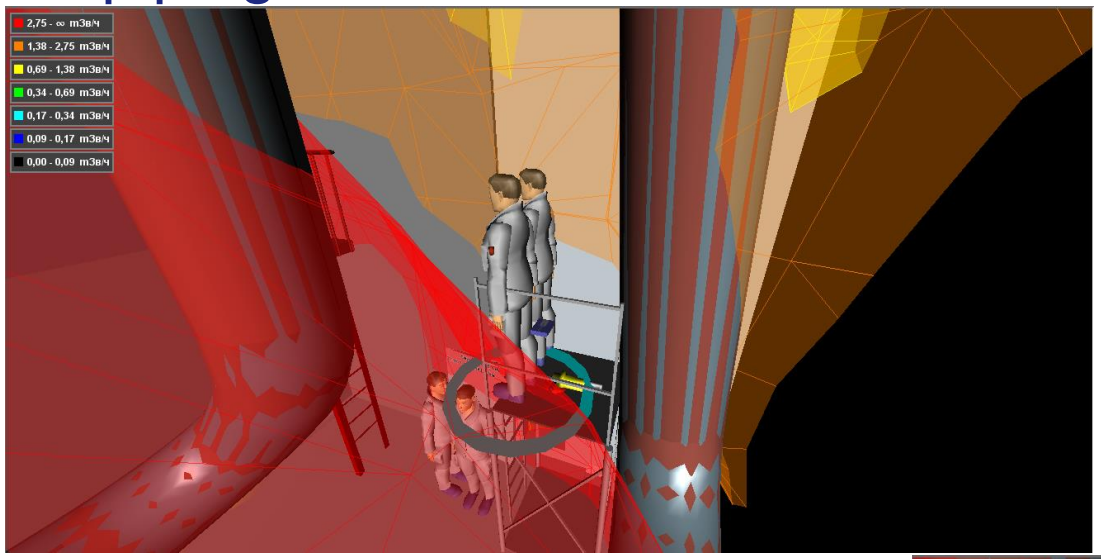


Fig.6 Distribution of gamma radiation field within working area prior to installation of a shielding

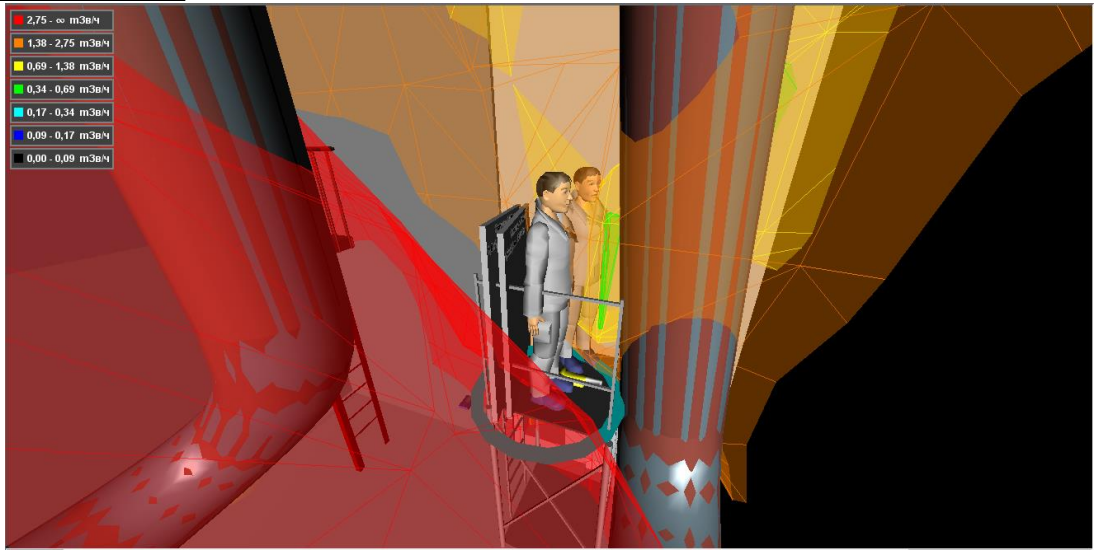


Fig.7 Distribution of gamma radiation field within working area after a shielding installation

Application of VRdose® at Leningrad NPP
CASE 1 – The room with reactor coolant system piping

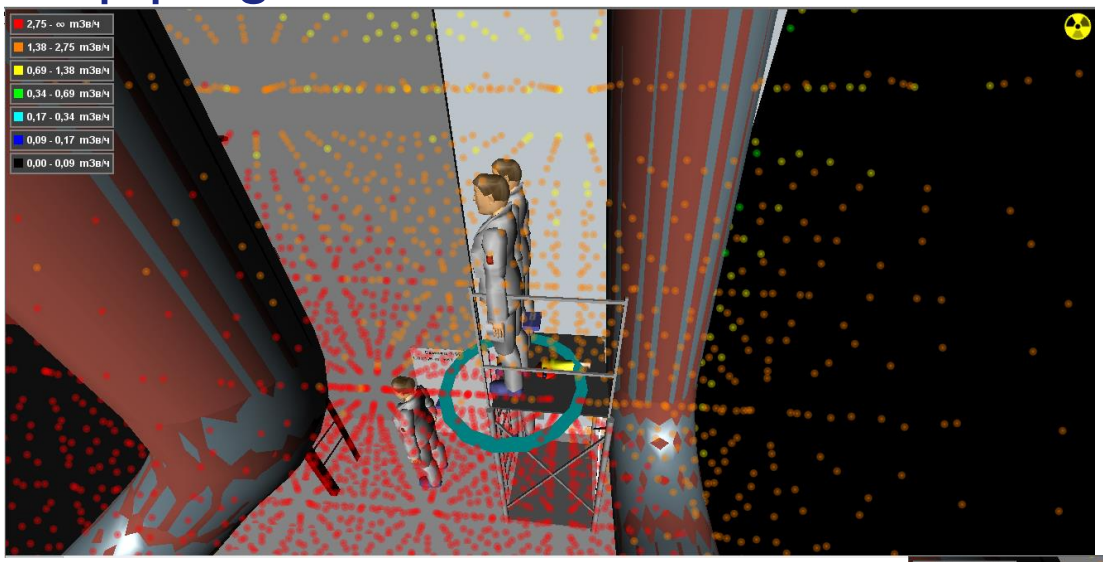


Fig.8 Distribution of gamma radiation field within working area prior to shielding installation - Point visualization

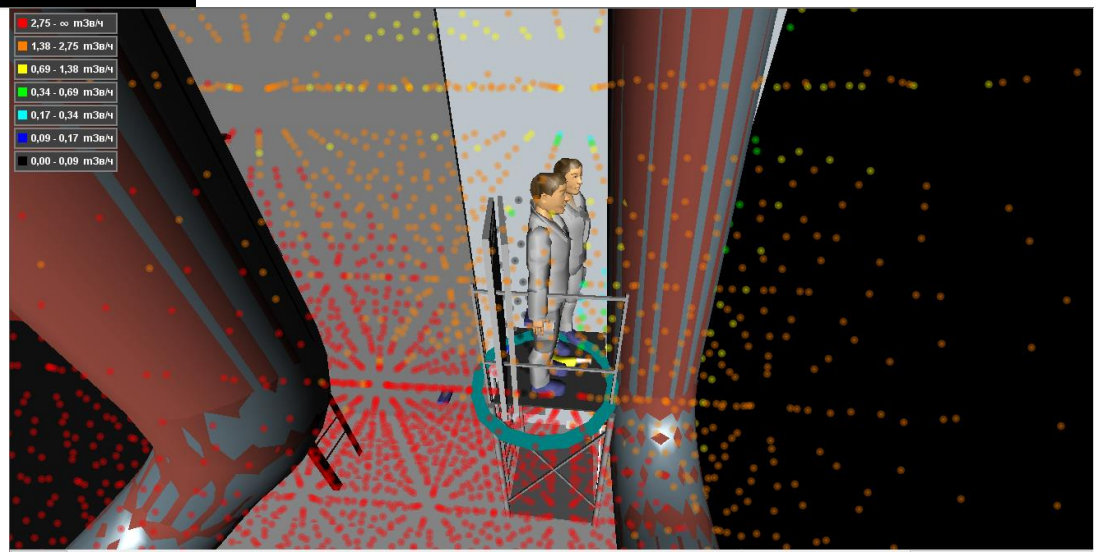
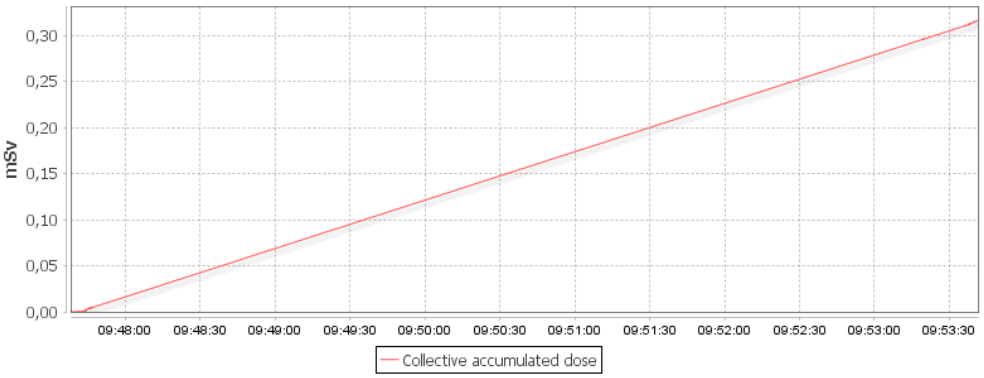


Fig.9 Distribution of gamma radiation field within working area after a shielding installation – Point visualization

Application of VRdose® at Leningrad NPP
CASE 1 – The room with reactor coolant system piping



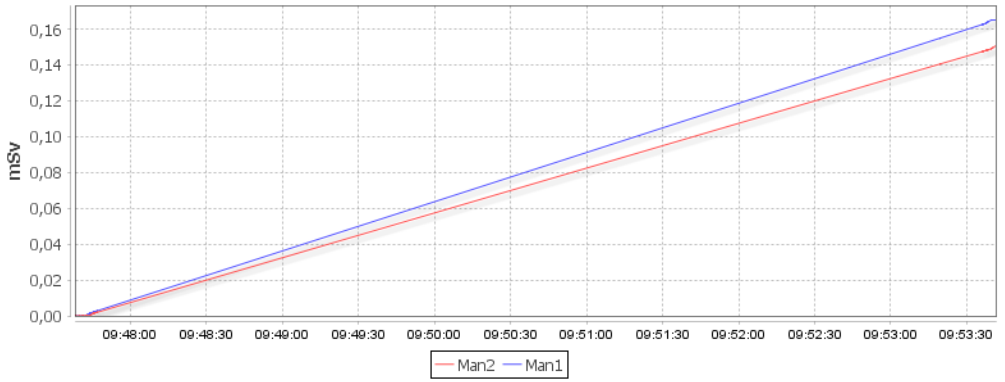
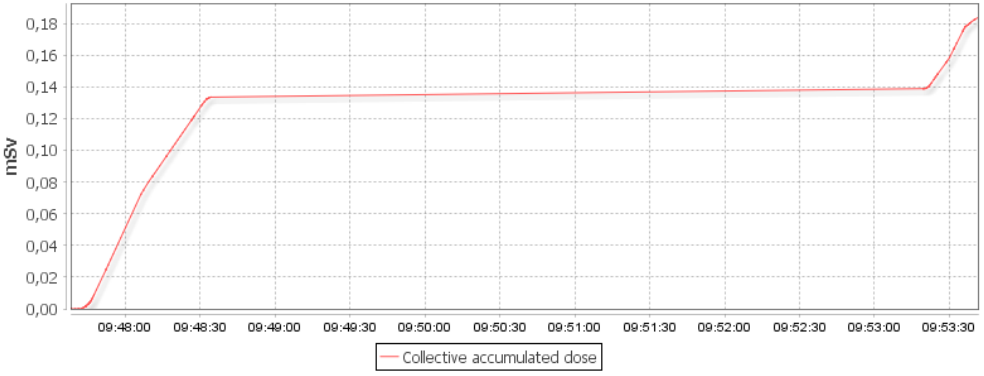


Fig.10 Radiological parameters prior to shielding installation



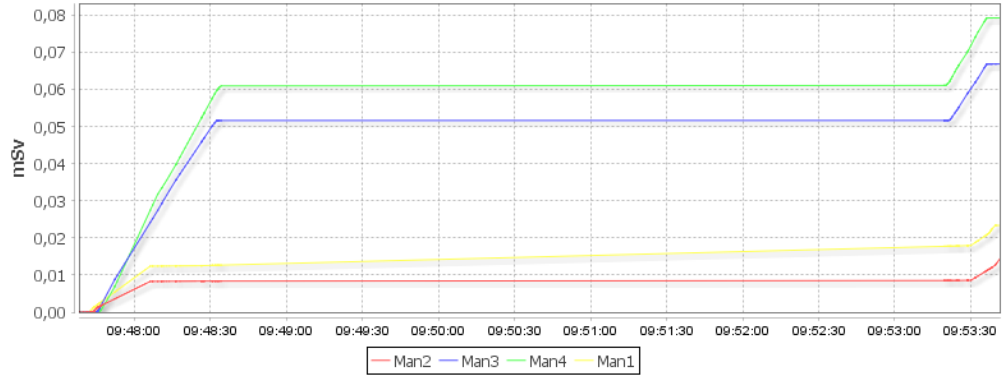


Fig.11 Radiological parameters after shielding installation

Application of VRdose® at Leningrad NPP
CASE 1 – The room with reactor coolant system piping

Fig.12 Changing of exposure rate prior to shielding installation

Fig.13 Changing of exposure rate after shielding installation

Application of VRdose® at Leningrad NPP
CASE 1 – The room with reactor coolant system piping

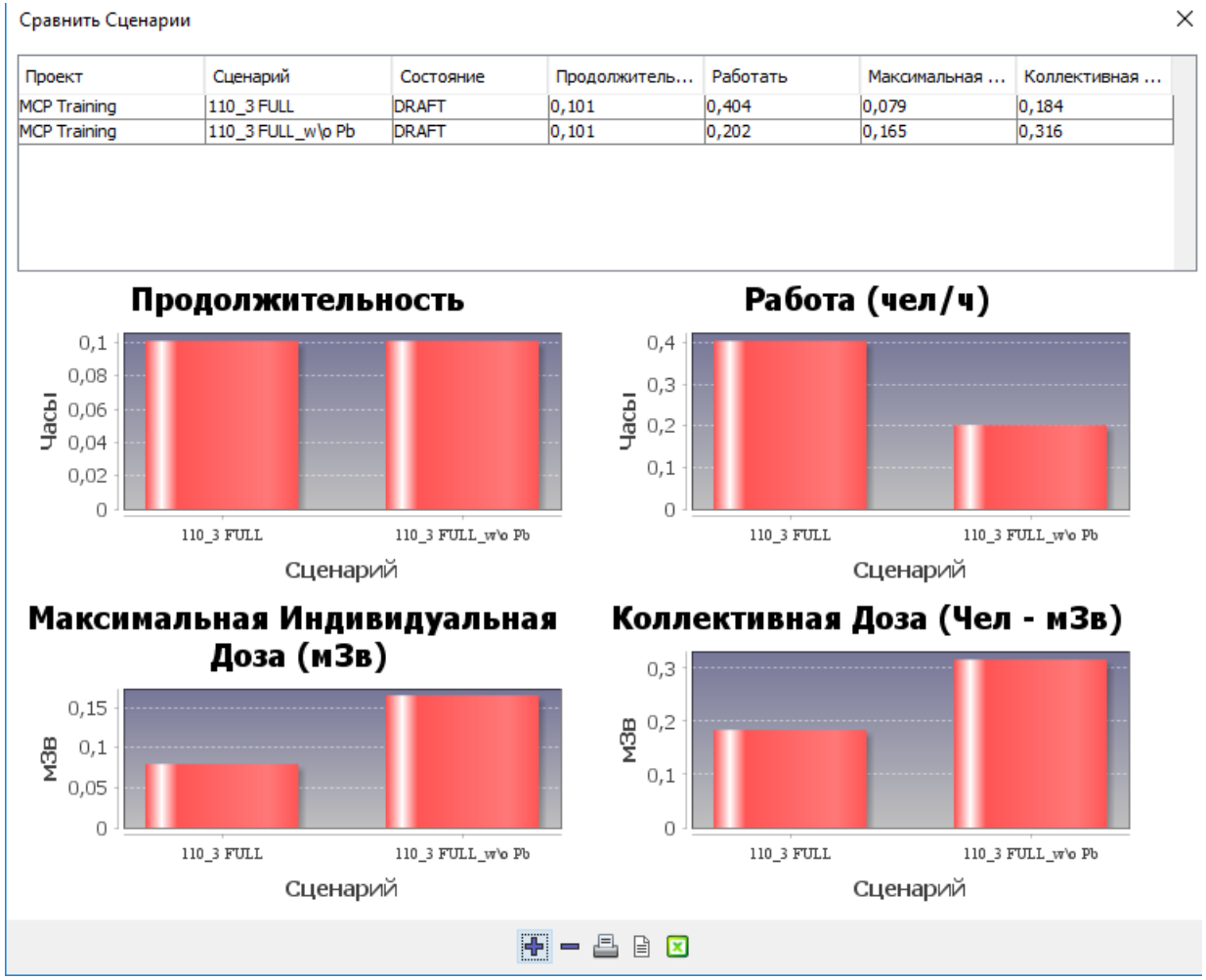


Fig.14 Comparison of radiological parameters in various scenarios

Application of VRdose® at Leningrad NPP
CASE 2 – the rooms with emergency core cooling system piping

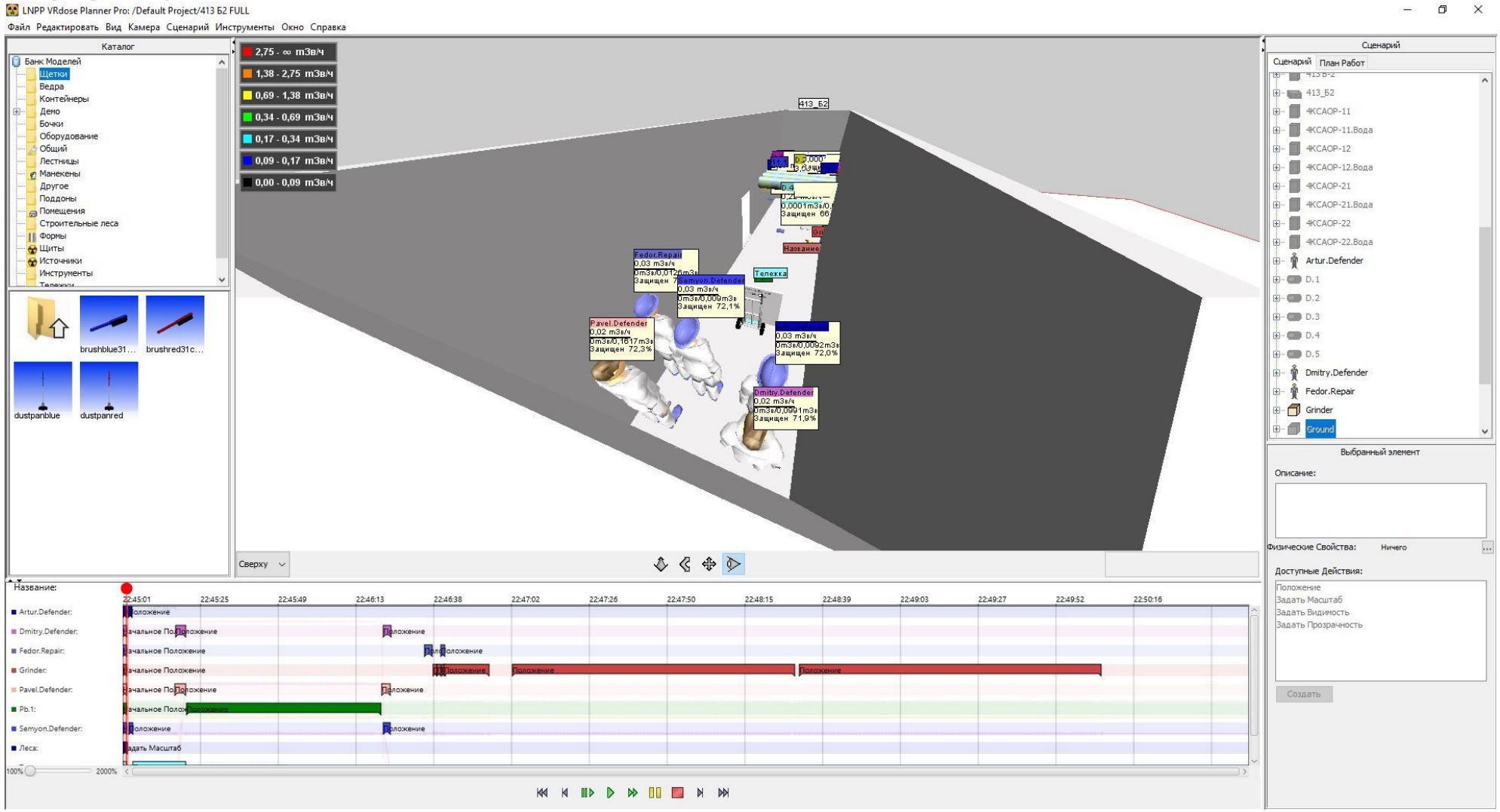


Fig.15 View of VRdose® main window

Application of VRdose® at Leningrad NPP
CASE 2 – the rooms with emergency core cooling system piping

Fig.16 3D-view of the room with measurements data

Application of VRdose® at Leningrad NPP
CASE 2 – The Rooms With Emergency Core Cooling System Piping

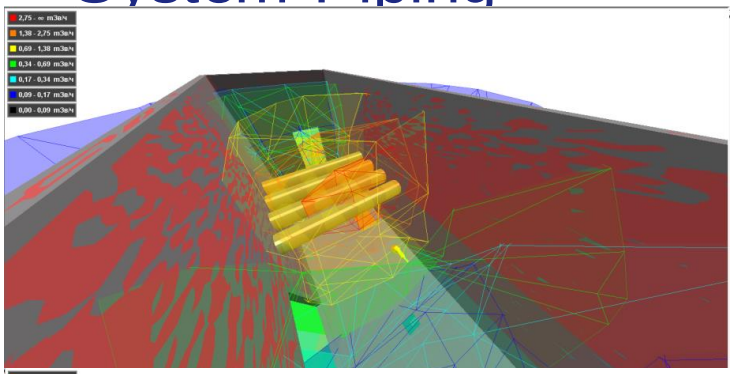


Fig.17 Distribution of gamma radiation field within working area prior to shielding installation

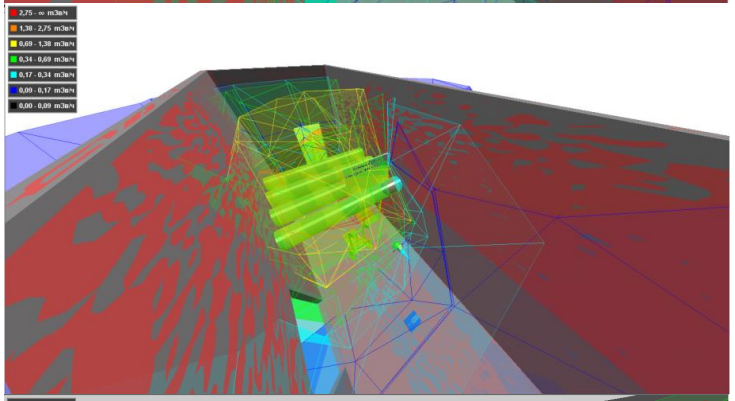


Fig.18 Distribution of gamma radiation field within working area after 4 cm thick shielding installation

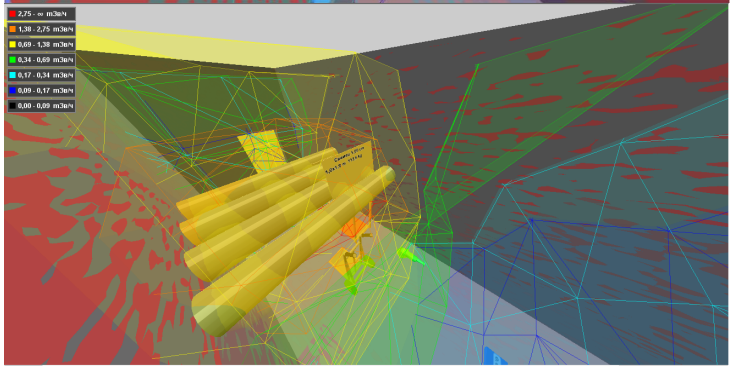


Fig.19 Distribution of gamma radiation field within working area after 1 cm thick shielding installation

Application of VRdose® at Leningrad NPP
CASE 2 – The Rooms With Emergency Core Cooling System Piping

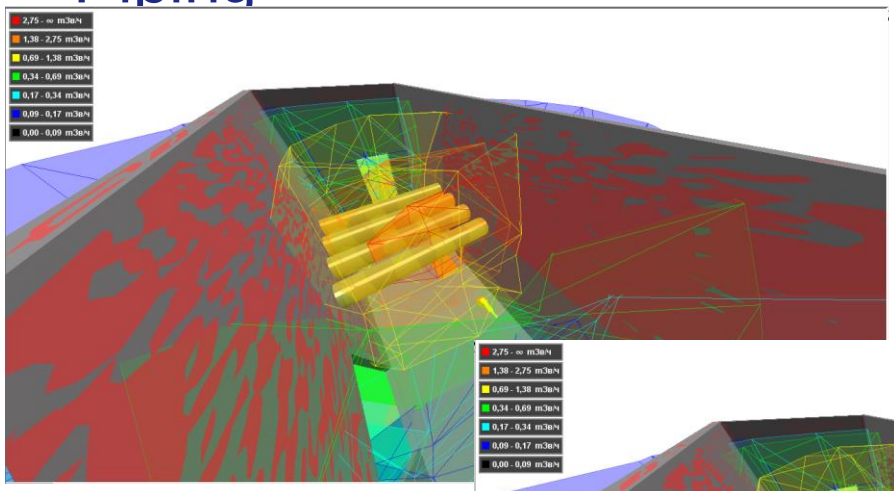


Fig.17 Distribution of gamma radiation field within working area prior to shielding installation

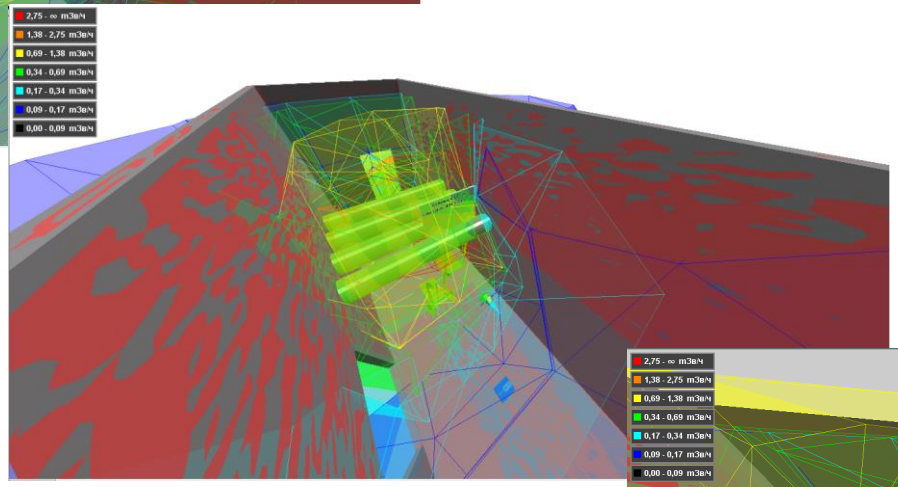


Fig.18 Distribution of gamma radiation field within working area after 4 cm thick shielding installation

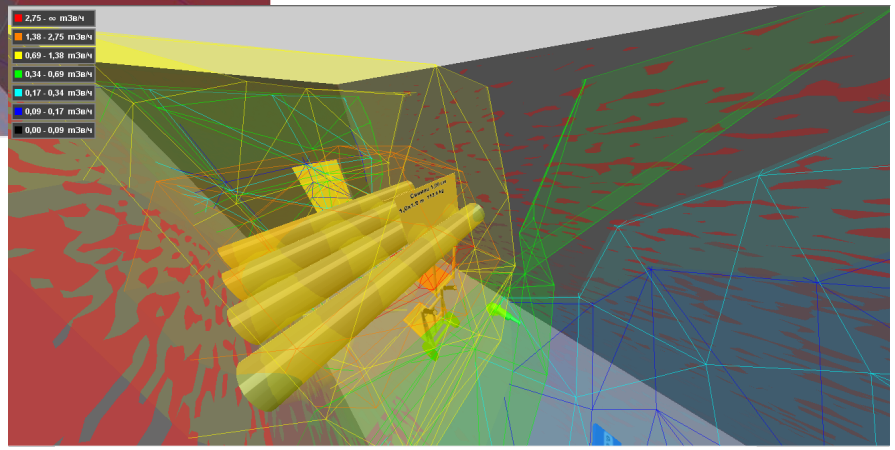


Fig.19 Distribution of gamma radiation field within working area after 1 cm thick shielding installation

Application of VRdose® at Leningrad NPP
CASE 2 – The Rooms With Emergency Core Cooling System Piping

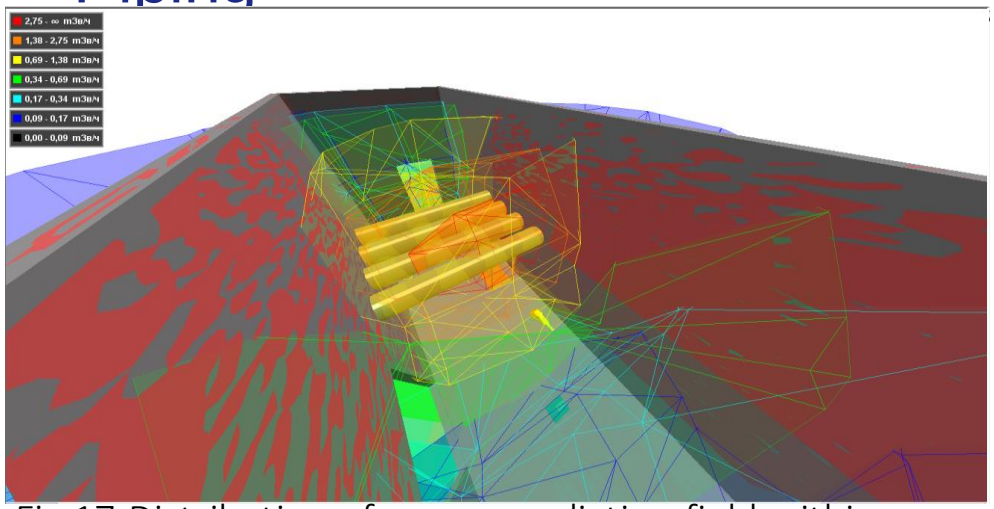


Fig.17 Distribution of gamma radiation field within working area prior to shielding installation

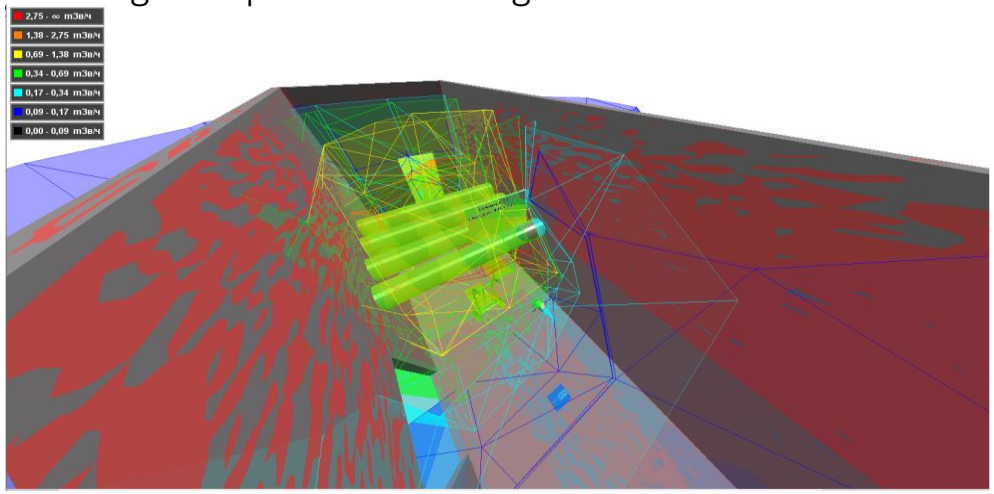


Fig.19 Distribution of radiation field within working area after 1 cm thick shielding installation

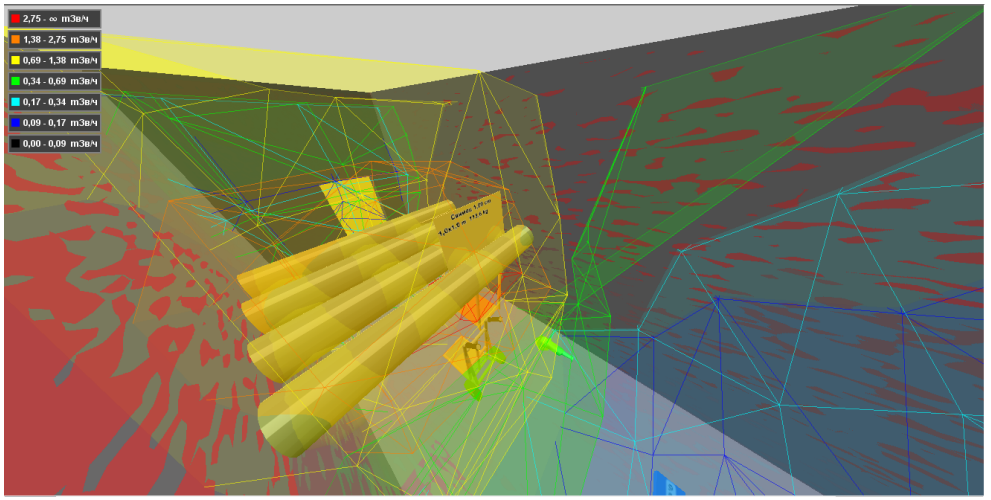


Fig.18 Distribution of gamma radiation field within working area after 4 cm thick shielding installation

Application of VRdose® at Leningrad NPP
CASE 2 – The Rooms With Emergency Core Cooling System Piping

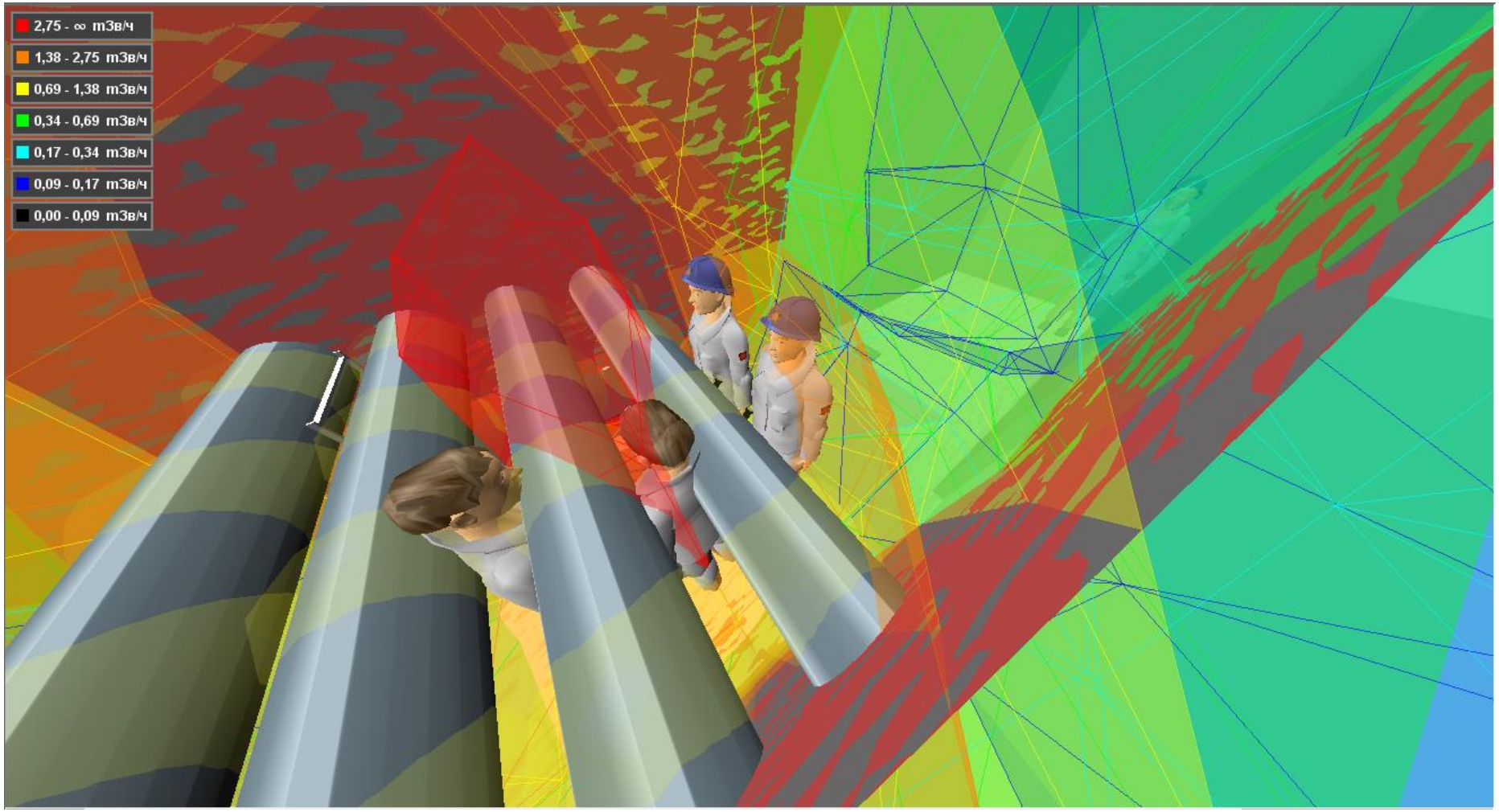


Fig.20 Positioning of workers during the installation of lead shield; 4 cm thick

Application of VRdose® at Leningrad NPP
CASE 2 – The Rooms With Emergency Core Cooling System Piping

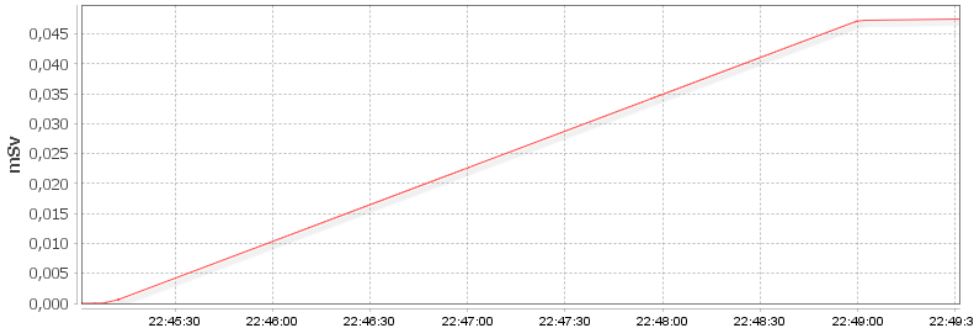


Fig.21 Collective dose diagrams; no shielding installed

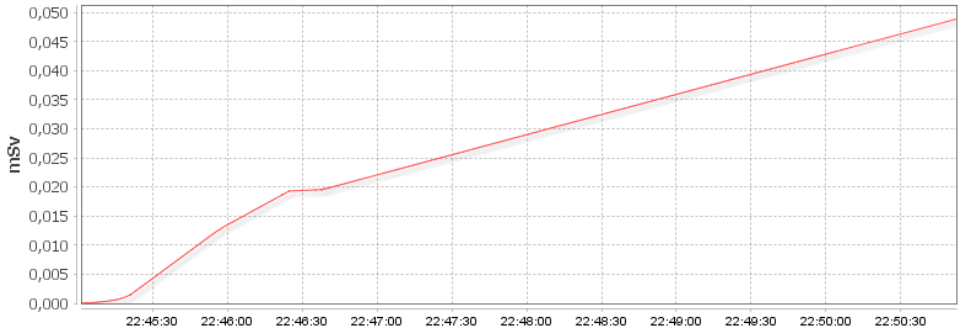


Fig.22 Collective dose diagrams; 1cm lead shielding installed

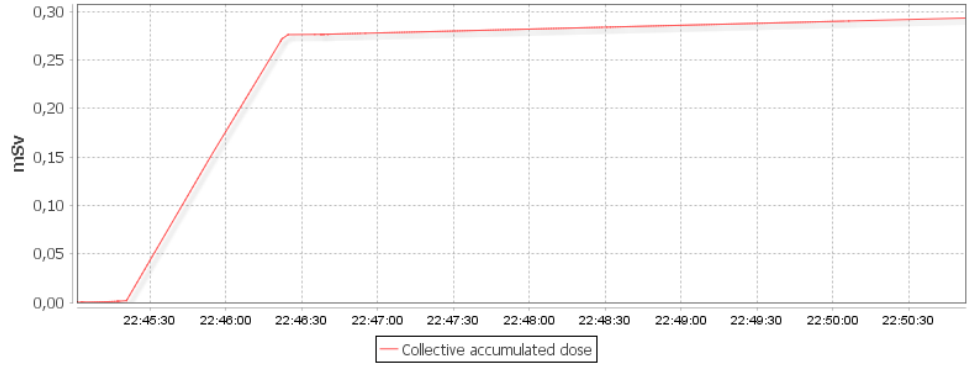


Fig.23 Collective dose diagrams; 4cm lead shielding installed

Application of VRdose® at Leningrad NPP CASE 2 – The Rooms With Emergency Core Cooling System Piping

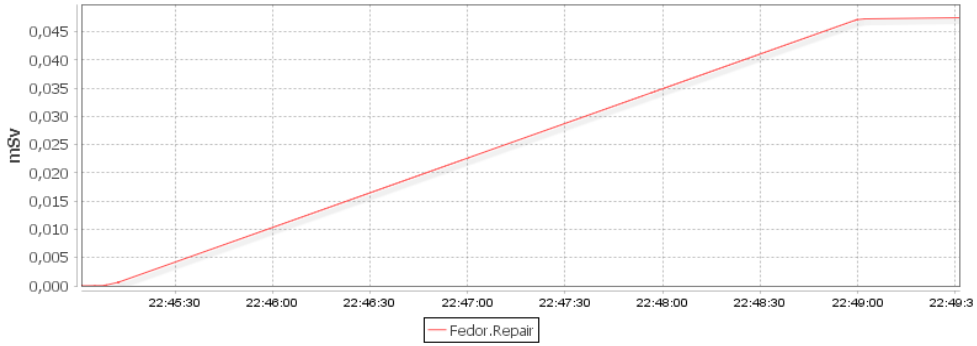


Fig.24 Personal dose diagrams; no shielding installed

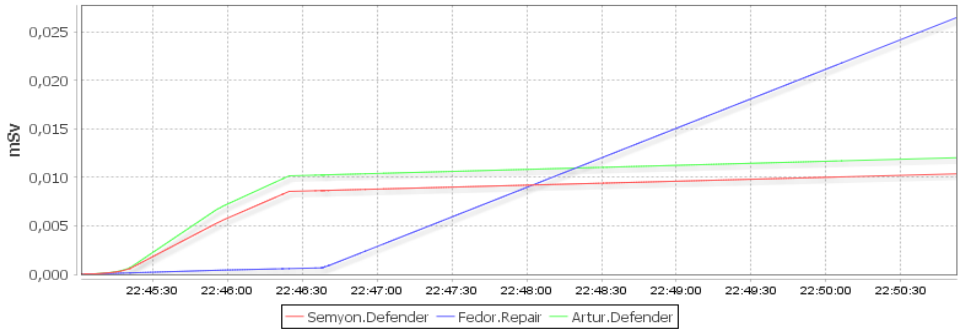


Fig.25 Personal dose diagrams; 1cm lead shielding installed

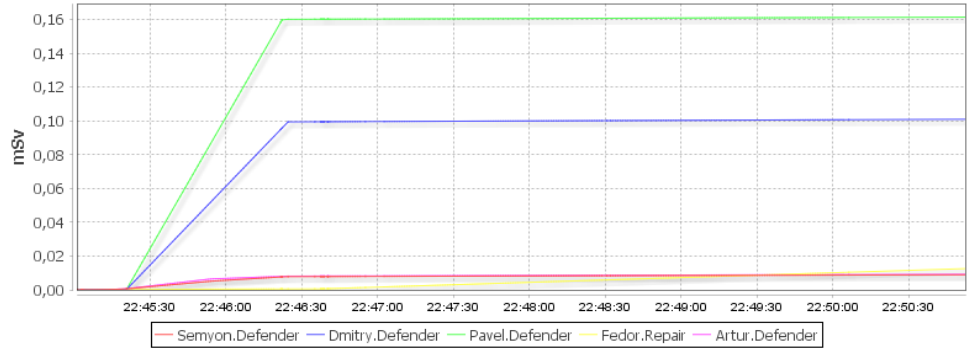


Fig.26 Personal dose diagrams; 4cm lead shielding installed

Application of VRdose® at Leningrad NPP
CASE 2 – The Rooms With Emergency Core Cooling System Piping

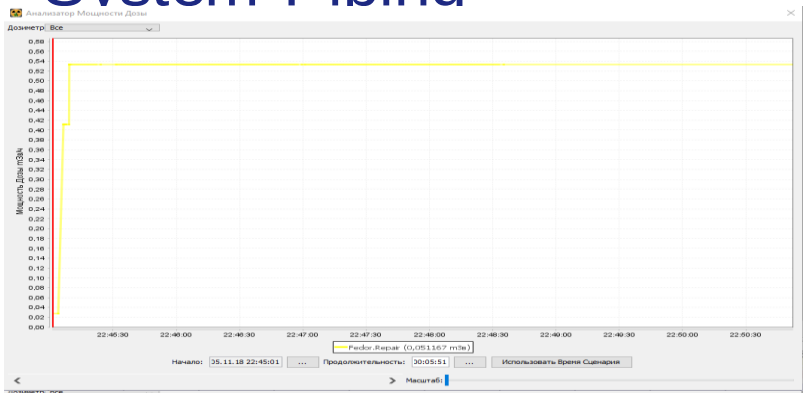


Fig.27 Exposure rate diagrams;
no shielding installed

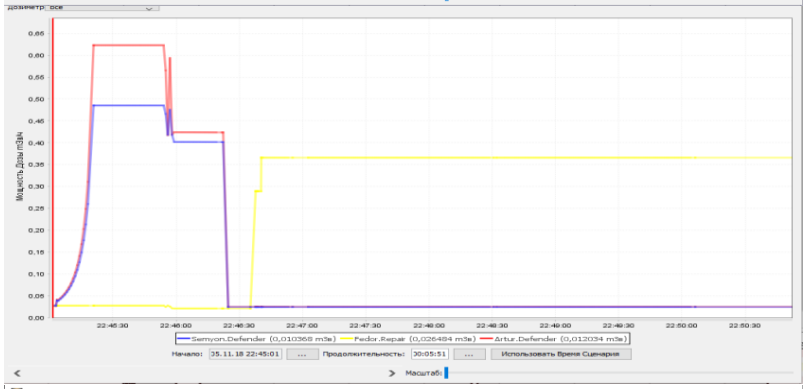


Fig.28 Exposure rate diagrams;
1cm lead shield installed

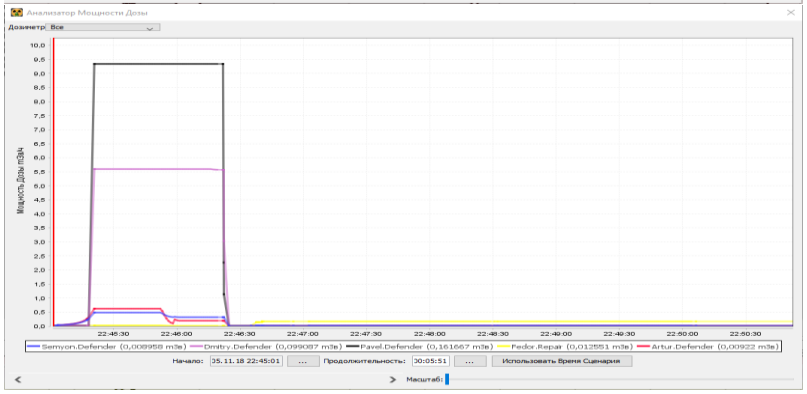


Fig.29 Exposure rate diagrams;
4cm lead shield installed

Application of VRdose® at Leningrad NPP
CASE 2 – The Rooms With Emergency Core Cooling System Piping

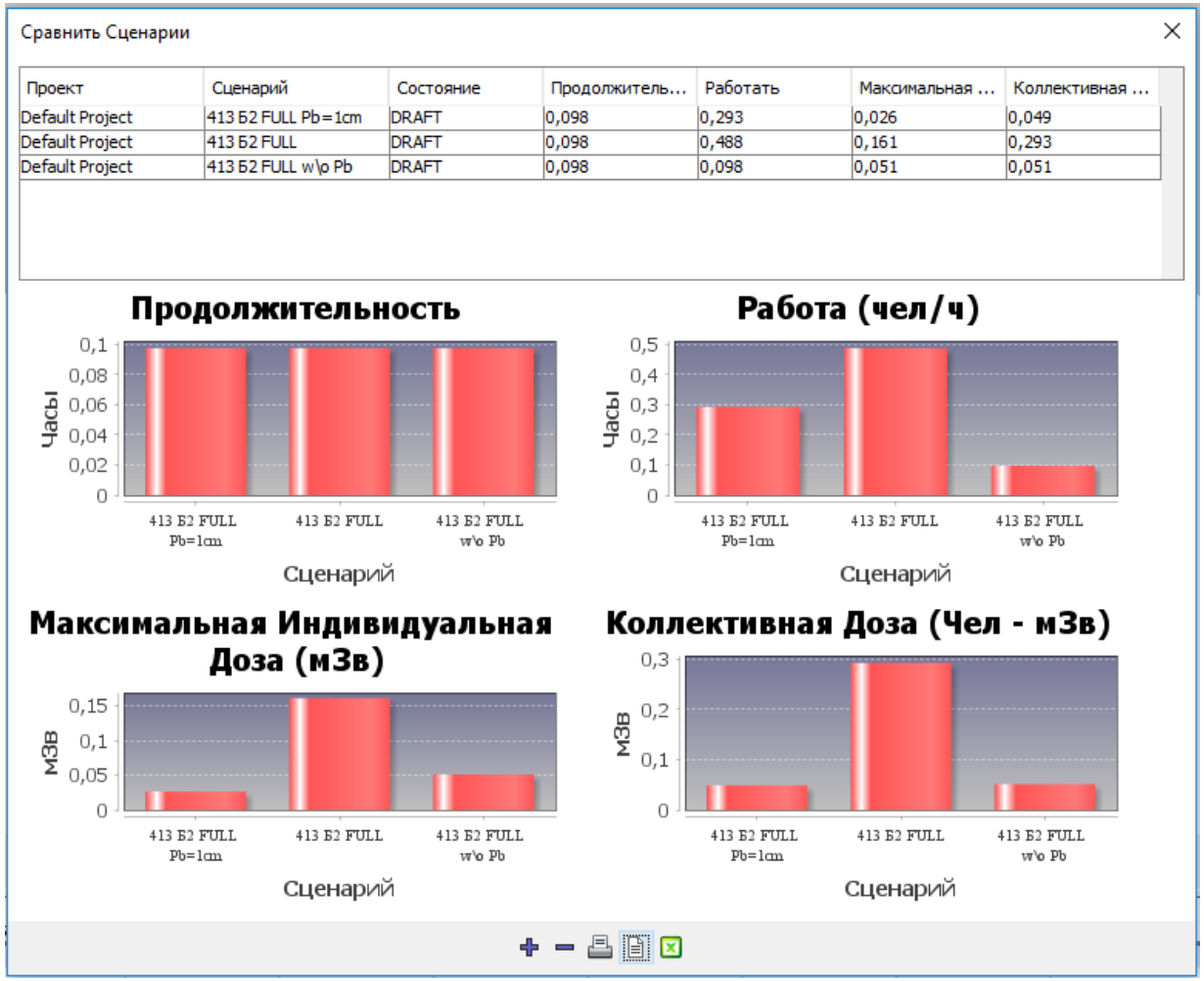


Fig.30 Comparison of radiological parameters in various scenarios

Application of VRdose® at Leningrad NPP
CASE 3 – Visualization of Gamma Radiation Sources

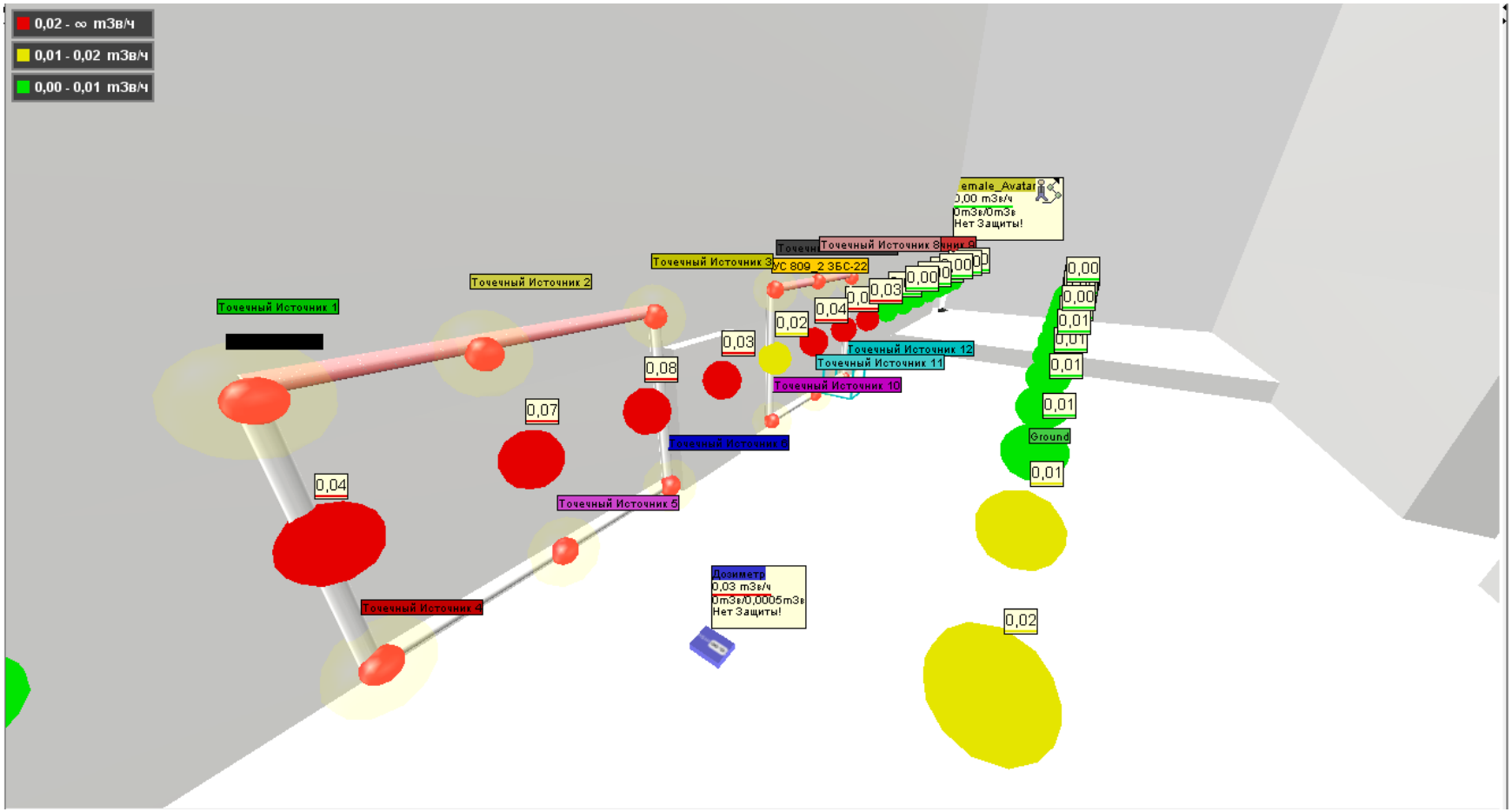


Fig.31 View of the map with sources and measurements data

Application of VRdose® at Leningrad NPP
CASE 3 – Visualization of Gamma Radiation Sources

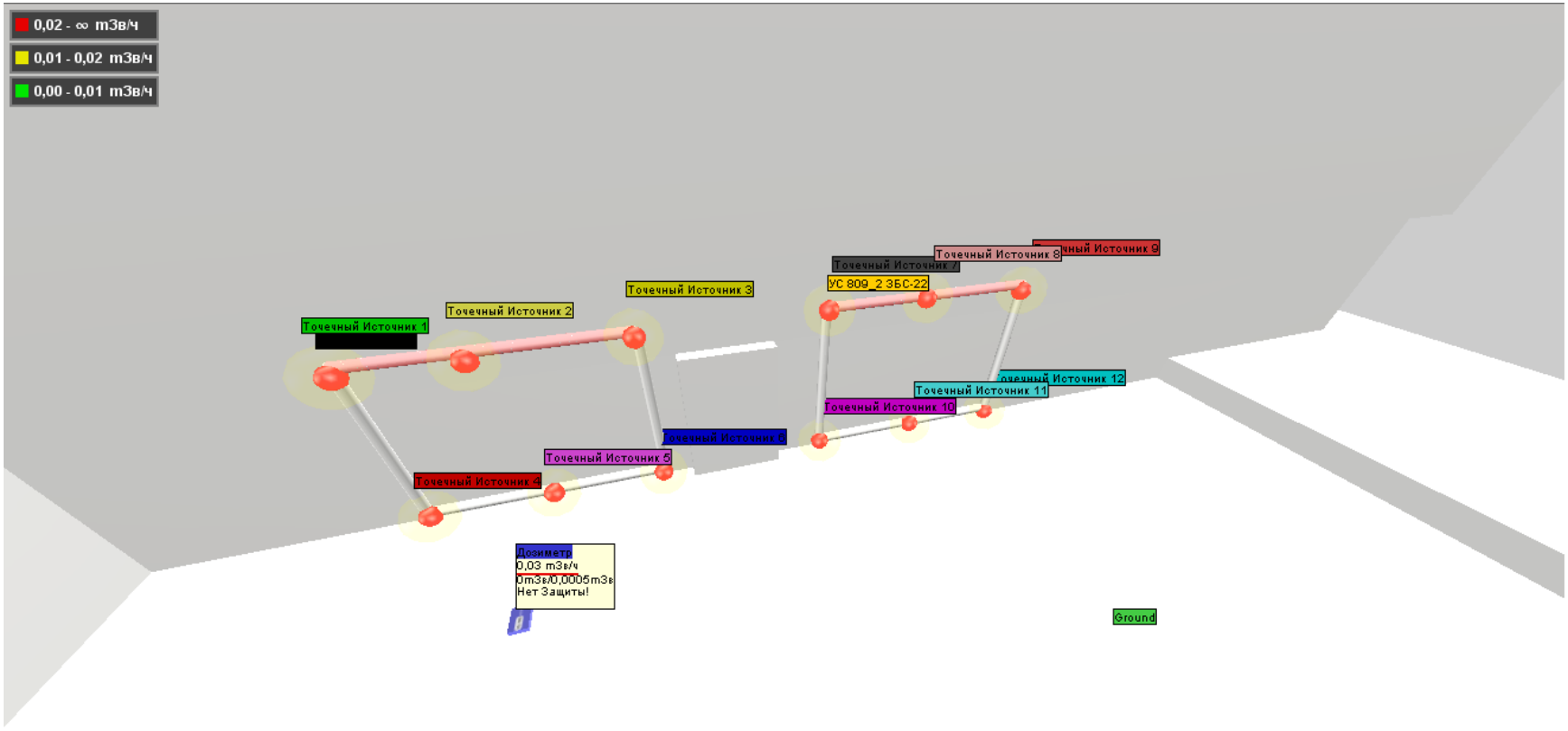


Fig.32 View of the sources map

Application of VRdose® at Leningrad NPP
CASE 3 – Visualization of Gamma Radiation Sources

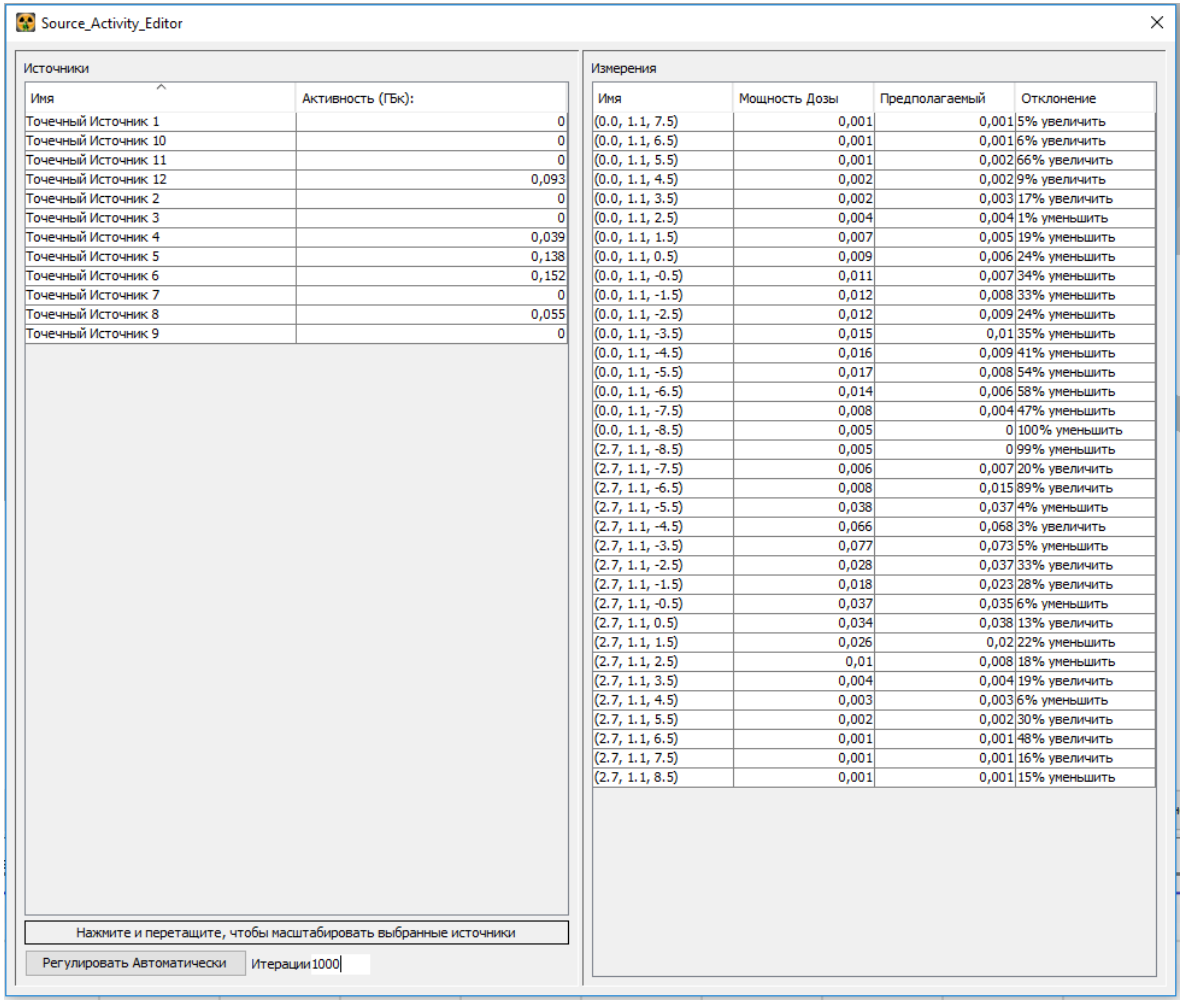


Fig.33 Activity calculations for various sources

Application of VRdose® at Leningrad NPP
CASE 3 – Visualization of Gamma Radiation Sources

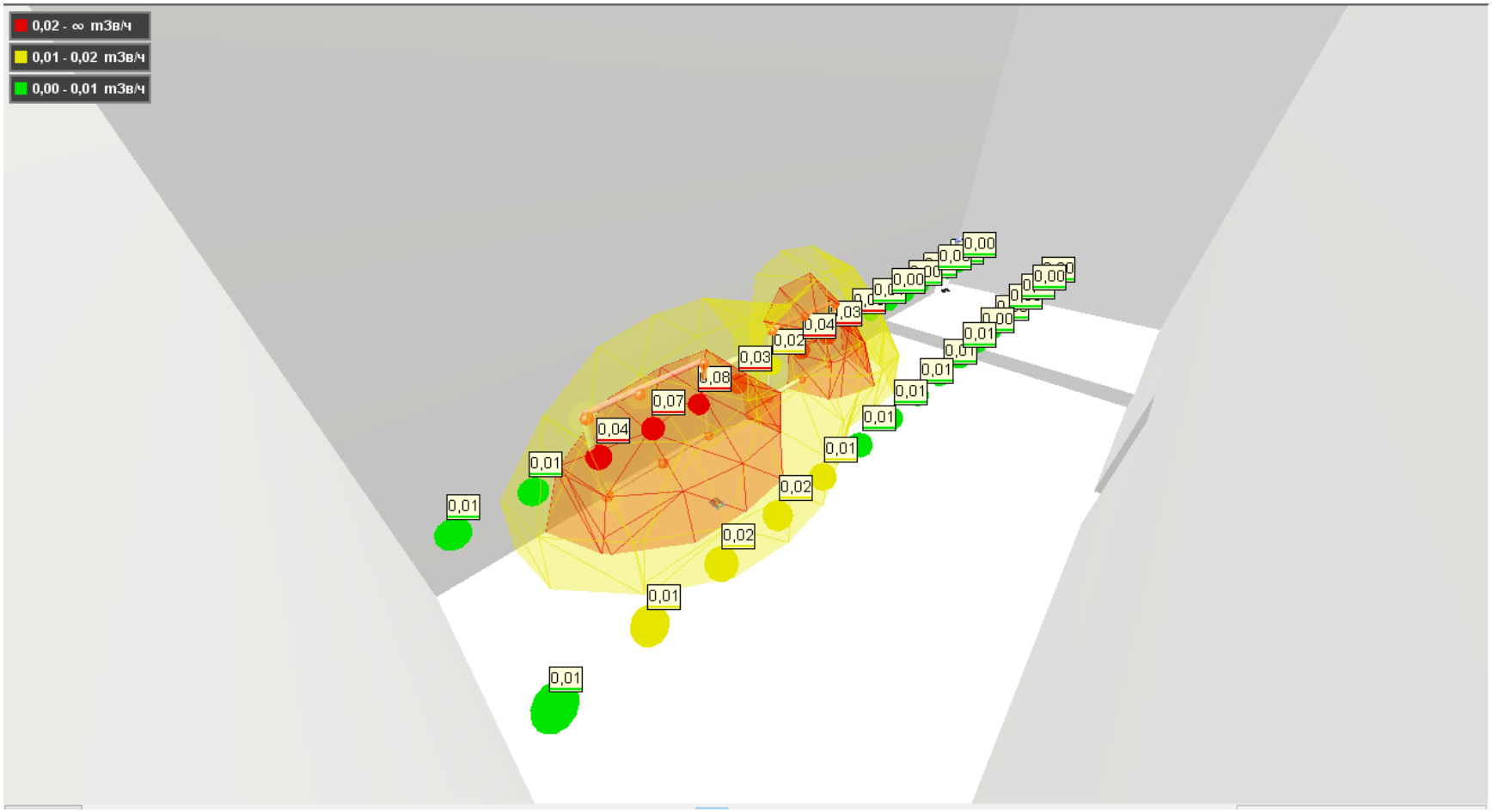


Fig.34 The surface visualization of exposure rates from gamma field

Application of VRdose® at Leningrad NPP
CASE 3 – Visualization of Gamma Radiation Sources

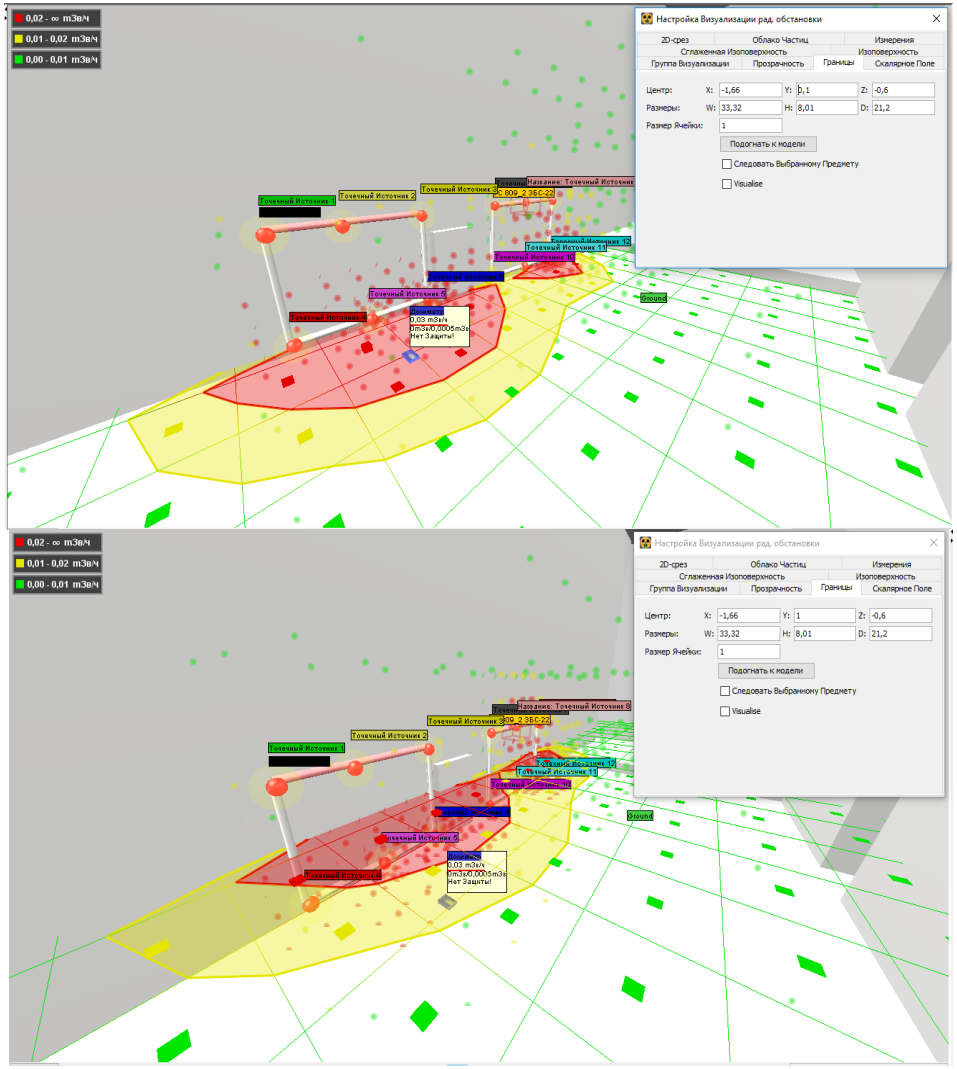


Fig.35 2D visualization of exposure rates from gamma field

Application of VRdose® at Leningrad NPP
CASE 3 – Visualization of Gamma Radiation Sources

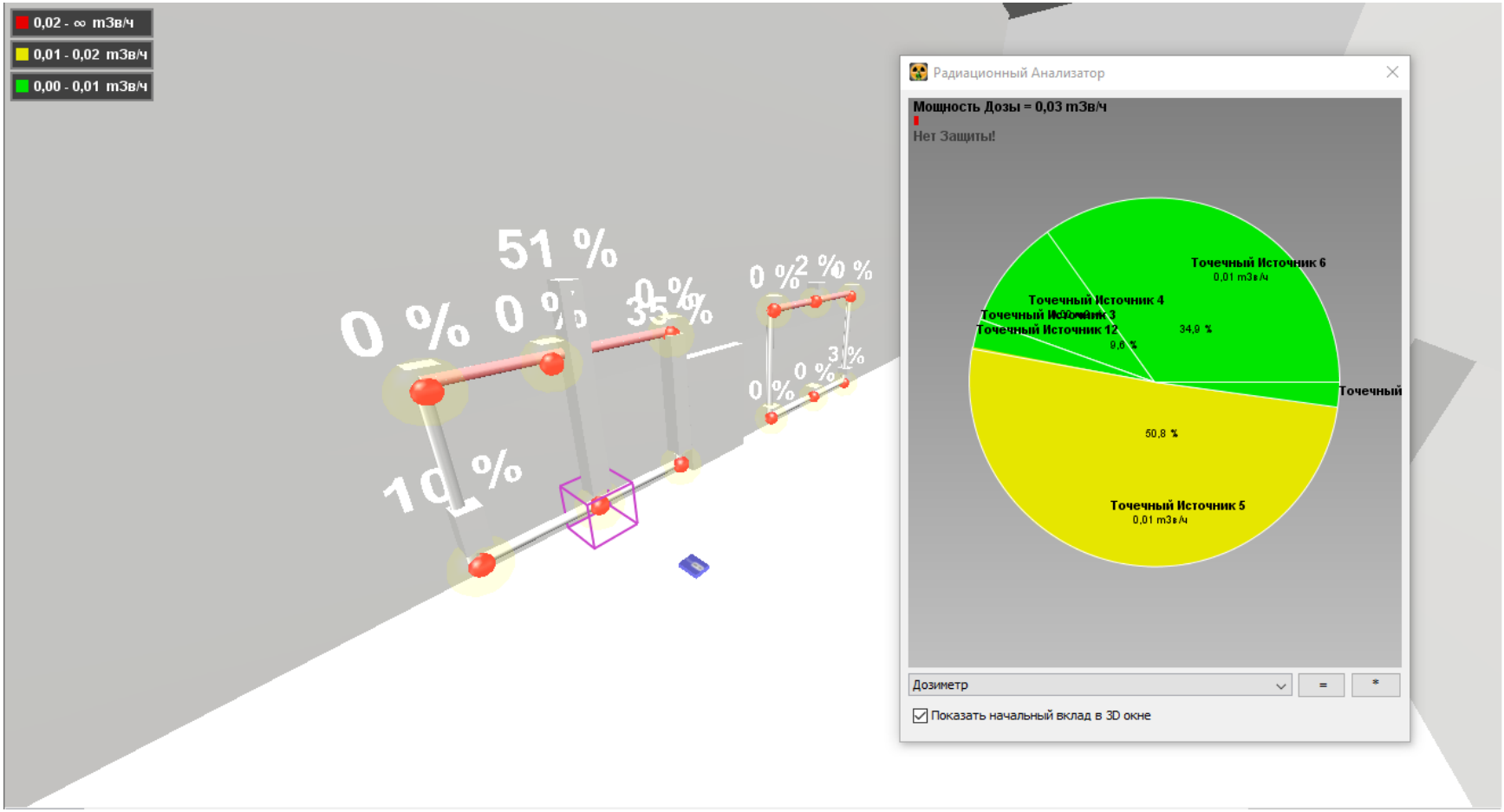


Fig.36 Analyzer of exposure doses

Application of VRdose® at Leningrad NPP SUMMARY

LNPP Planner helps us to make:

- **A forecast of accumulated doses (personal and collective)**
- **Visualization of exposure from gamma fields in 2D and 3D**
- **To make calculations of radioactive sources**
- **To make calculations of shielding**
- **To make comparison between different scenarios**
- **To make modeling of future works**

AND WE ARE HAPPY TO ANSWER
YOUR QUESTIONS!

Pavel Vinnikov
Shift supervisor