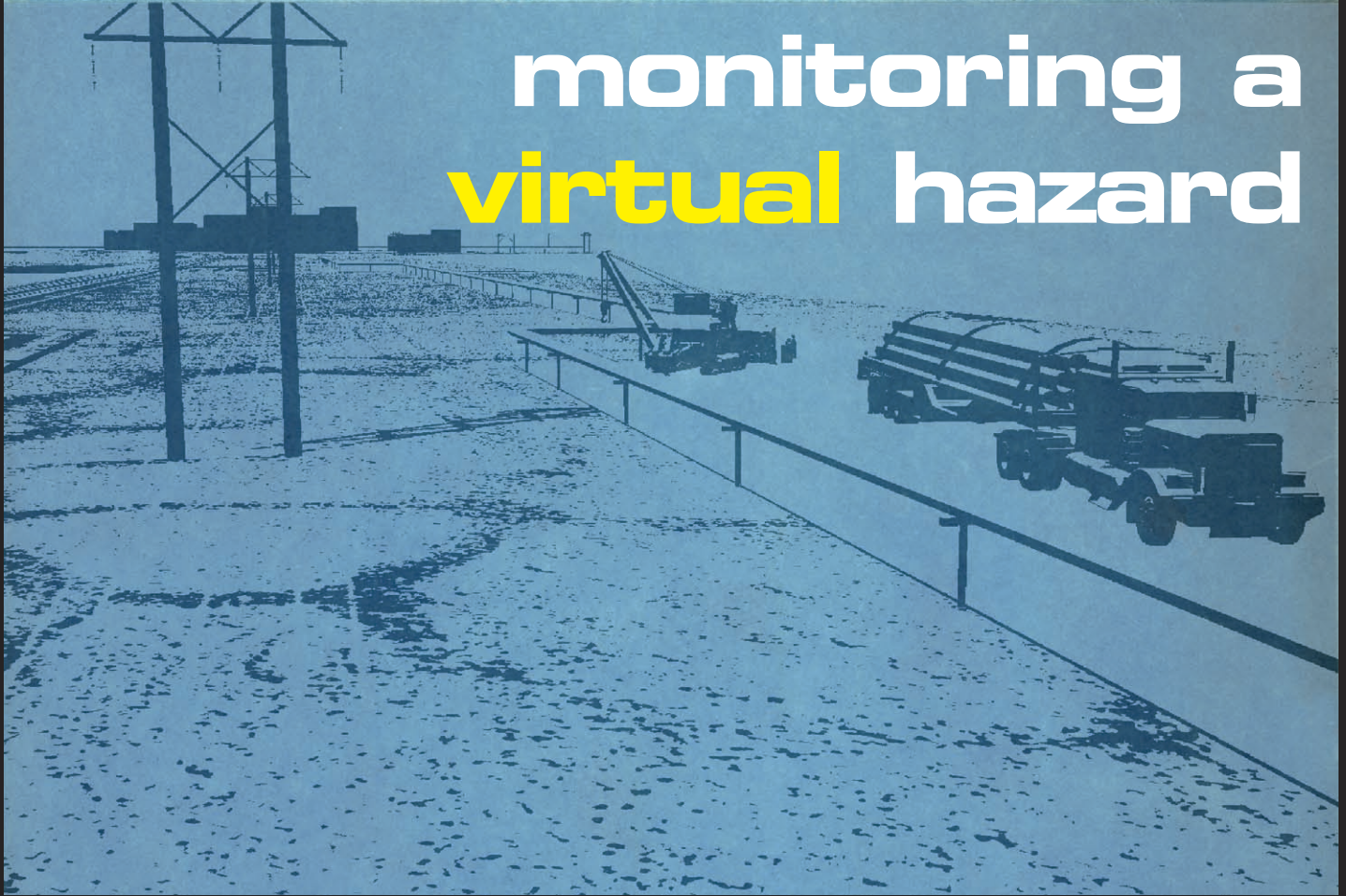


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# monitoring a virtual hazard



**Matthew DeMeritt, ESRI, USA,**  
 discusses how BP uses GIS  
 technology to minimise risk on  
 Alaska's North Slope.

**W**hat does a business do when faced with a very short construction season in a remote, environmentally sensitive location? BP Exploration Alaska (BPXA) proactively addressed this problem with what it calls a virtual hazard monitoring (VHM) tool. VHM uses GIS technology to accurately simulate the environmental and logistical constraints of remote projects. Being able to visualise and “walk through” a work environment before arriving onsite allows crews

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that could then be used by ArcGIS Explorer. At the start of the project the prototype was given a 50% chance of success by BPXA and HDR, considering the aggressive development schedule of two and a half months, data constraints, and the untested state of the technology. To meet the project schedule, the team started data preparation while gathering business requirements and building functional specifications for the prototype. The data to support the project included high-resolution orthophotography; construction designs migrated from CAD to GIS; and existing GIS datasets for pipelines, electric power facilities, and buildings. BPXA also had recent LIDAR data, which provided elevations for structures (most of the existing footprints and GIS data was in 2D). Other known elevation data was embedded in the pipeline CAD designs, and, in some cases, typical sections and design standards were used to generate the required elevations for the rest of the features. The resulting GIS data was an accurate depiction of BPXA's elevated pipeline infrastructure, their power transmission and distribution network, and the site-specific on-slope buildings, all of which were in 3D.

### Custom tasks built to enhance the toolset

Many of the decisions that were made as to how to depict 3D features were based on maximising performance of the application. To meet functional

specifications, custom tasks were built to enhance ArcGIS Explorer's out-of-the box toolset. These custom tasks were able to be deployed from ArcGIS Server to ArcGIS Explorer without the need for customised installations of ArcGIS Explorer.

At project close, a findings document was produced. The key points addressed in the findings were as follows:

- The technology has advanced to a stage where ArcGIS Server is robust enough to serve real-time GIS 3D data in web environment.
- ArcGIS Explorer is a viable client for display and use of globe services.
- This technology is viable not only as a training tool but for a variety of situations where an enhanced view of the environment (beyond standard 2D mapping or design) is required to support business process.
- As BPXA goes forward with other parallel initiatives, such as enterprise GIS, the ability to build 3D GIS environments will be part of overall design considerations (i.e., GIS technology is being adopted as part of BPXA's overall corporate environment).

VHM was delivered on time to BPXA and met all business and project objectives. Upon completion, Steve Gerlek, Pipeline Renewal Delivery Manager for BPXA, commented "I am convinced I just glimpsed the future, and it is closer than I had believed". **WP**



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