

Project Name: Richmond Refinery PSM 570 Project
Project Description: Simultaneous creation of both accurate Inspection ISO's and as-builts (for future retrofit design)
Scope: 2000' long x 30' wide, produce 2D and 3D AutoCAD® files
Owner: Chevron
Project Date: Spring, 1999

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"We also used Cyrax on a trial program to model remote, off-plot pipeways in order to determine if the technology could help us in our effort to provide refinery isometrics for inspection purposes. We were able to determine that using laser imaging did get us to a final product quicker than conventional means. We are also convinced that this method will continue to get quicker with additional experience. Another feature is that we determined this method to be significantly safer (no more climbing around in pipeways in remote, isolated areas)."

Bob Smith, Chevron Corporation Project Manager

BACKGROUND: Chevron has been an early supporter of the *Cyrax* system. In 1999 the company initiated a three year comprehensive technology deployment plan involving a large number of projects. The Richmond Refinery PSM 570 Project is one of a series of projects that also includes various other refineries, offshore platforms and other Chevron assets worldwide.

PROJECT: Chevron is conducting a piping documentation project in the Richmond Refinery based on API-570 requirements. This is a major effort in creating Inspection Isometrics of critical piping systems.

The traditional process requires designers to walk-down and field-sketch a piping system and then give the sketch to a CAD operator to create the AutoCAD® Inspection Isometric which is used to locate piping inspection points. These drawings typically have no dimensional information,

but represent the basic configuration only.

A project was conducted on an off-plot pipeway using *Cyrax* technology to determine if piping isometrics could be gener-

ated from the *Cyrax* 3D data just as efficiently, and, at the same time, create accurate 3D as-built documentation virtually free of charge.

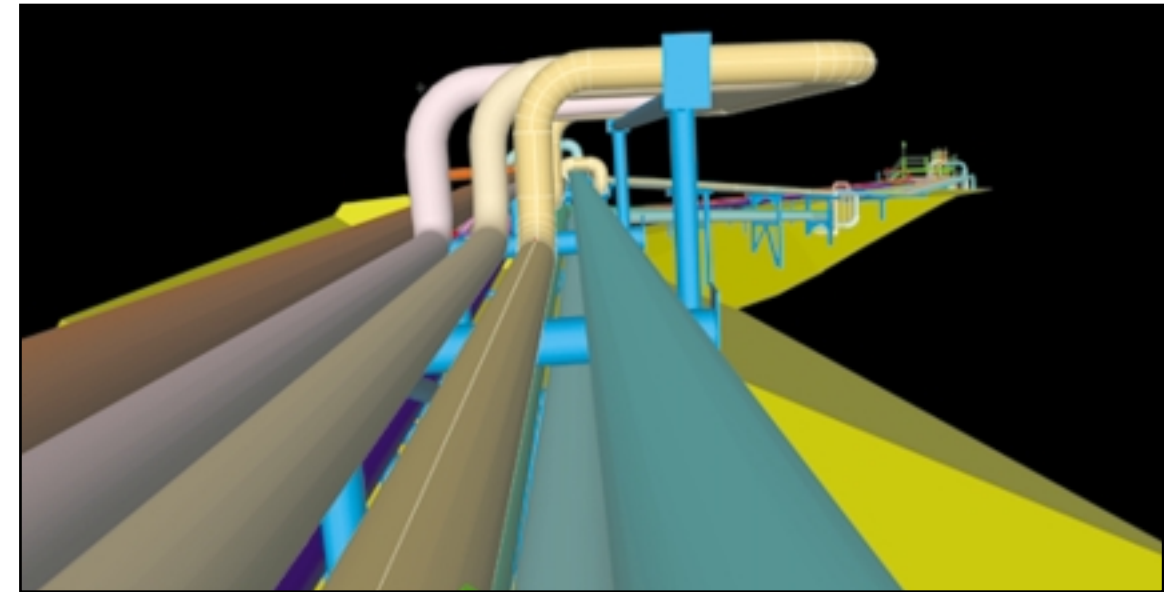
CYRAX ADVANTAGES: The pilot project showed that the Inspection Isometrics could be produced from the *Cyrax* data for approximately the same cost, and at the same time create 3D as-built information virtually free. This process represents an advantage over the existing methods of manual data gathering and drawing generation, as it adds dimensionally accurate 3D information which will bring value for operating and maintaining Chevron facilities now and into the future.

PROJECT FACTS

Field time: 1½ days
 Crew: 2
 Number of scans: 18

CYRAX BENEFITS

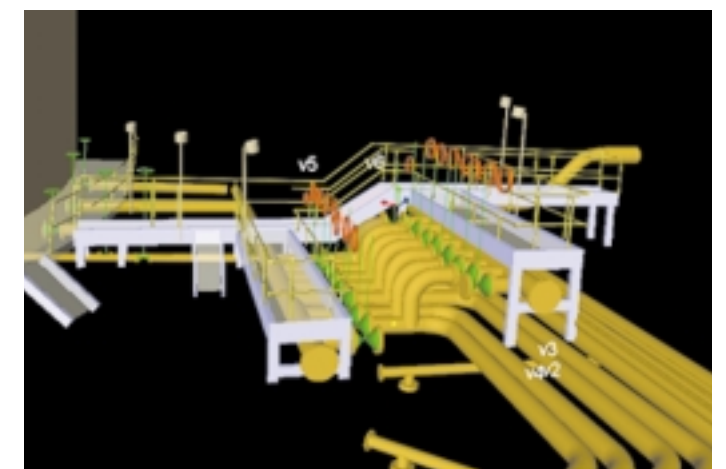
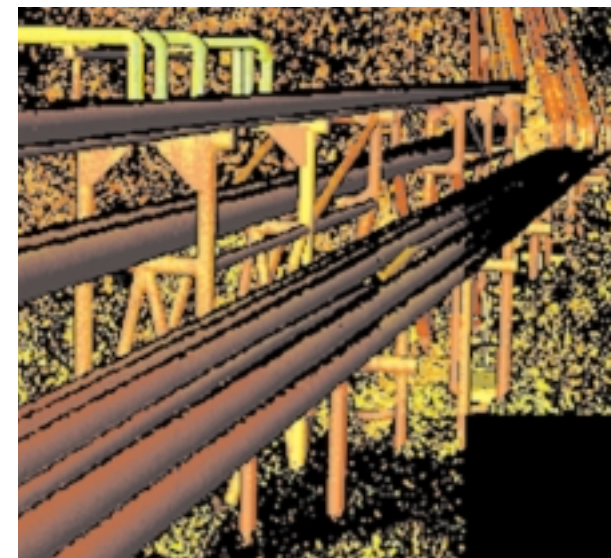
- Dimensionally accurate drawings for future retrofit projects
- 3D viewable computer models
- Safer collection of field measurements



Cyra Software generated this eye-level view of the project. Having a reliable 3D model of the existing pipeline allows designers to route new pipes with more confidence and reduce the opportunity for errors.



A view of a part of the off-plot pipeline moving uphill. Having part of the pipe obscured by vegetation did not cause a problem in modeling the entire length of the pipes.



Shrinkwrap image of the pipe and support structure (left) and the resulting Inspection Isometrics (AutoCAD® files) above.