PGDP Virtual Museum Development Summary Report
Calendar Years 2013 - 2018

FOREWARD

The following pages contain a timeline summary of activities required to develop, deploy and deliver an interactive Paducah Gaseous Diffusion Plant (PGDP) history website to the Department of Energy (DOE) Portsmouth Paducah Project Office (PPPO). Development of the 'PGDP Virtual Museum' (VM) website formally began in 2014 and was completed in July 2018. Prior to public release, PGDP VM website content is undergoing a DOE export control information security review.

BACKGROUND

Over the course of calendar year 2013 the DOE PPPO and the University of Kentucky - Kentucky Research Consortium for Energy and Environment (KRCEE) discussed the need for an interactive website to document the history and operation of the PGDP. Discussions were prompted by several contemporary issues including the desire to document the Site's 60-year operational history prior to cessation of enrichment activities, the desire to honor and document the efforts of several thousand past PGDP employees and the releases of interactive websites documenting the history and operation of the Portsmouth Gaseous Diffusion Plant (PORTS) and the Oak Ridge, Tennessee K-25 enrichment facilities. In the closing months of 2013 the DOE PPPO engaged KRCEE to develop an interactive 'virtual museum' to document PGDP history.

KRCEE partnered with the University of Kentucky - College of Design (CoD) in 2013 to explore development of an interactive public website to document the history and operation of the PGDP. CoD principal investigators Gary Rohrbacher and Anne Filson utilized a semester-long Graduate Design Studio to conduct project background research regarding the PGDP site, site history, physical museum display methods and the flow of museum information. The Studio also conducted research to identify probable website target audiences and the general information about consumption and learning habits of potential audiences.

In late 2013 a CoD Virtual Museum Team, comprised of CoD graduate students, was organized to execute the compilation, design and development of a PGDP Virtual Museum website 'to provide stakeholders and the public information regarding the DOE's historical site activities'. The CoD VM Team was tasked to:

- Research and collect PGDP Operations, Site Accomplishments, Site Impacts Information including touring PGDP Operational Facilities
- Organize the information for presentation as a 'Beta' PGDP Virtual Museum website
- Identify, obtain and utilize web-site development tools to deploy a PGDP Beta VM website

2014

<u>Early 2014 to Mid 2014</u>

'Beta' Virtual Museum Project formally funded

CoD VM Team activities formally start

Review of PORTS and K-25 history websites

Decision made to utilize Wordpress as website development and deployment platform

Wordpress decision made to take advantage of Wordpress tools to serve and navigate content versus in-house programming or coding of site and site tools

Designed page formats and navigation standards

Designed website icon/logo (based on historical Union Carbide logo)

Decision made to utilize existing sources of PGDP historical information for topical and text content including
- Virtual Museum content to be developed with consideration of other DOE historical websites (PORTS, K-25) content and formats
- Focus of historical site information suggested to be PGDP Citizens Advisory Board publication 'Megawatts *to Megatons to Megawatts'* and KRCEE draft manuscript 'History of the PGDP'
- Utilize DOE and KRCEE provided photographical content
- Utilize research-available graphical and photographical content

<u>Mid 2014 to Late 2014</u>

Preliminary organization of available information completed

CoD VM Team develops content including
- Topical sections
- Text
- Graphical supporting content
- Photographical/Video supporting content

VM web pages populated during course of content development and posted for review by KRCEE and DOE

2015

<u>Early 2015 to Mid 2015</u>

CoD VM Team completes initial population of content to Beta VM website

DOE adds PPPO media personnel to CoD VM Team

Mid 2015 to Late 2015

VM web pages populated during course of content development and posted for review by KRCEE and DOE

Formal Beta VM review conducted in July 2015 (PPPO)

Revisions to Beta VM underway from formal review

2016

Early 2016 to Mid 2016

Beta VM final web revisions and edits completed (from July 2015 Beta VM formal review).

Mid 2016 to Late 2016

August 2016 - CoD Beta VM live presentation to DOE PPPO and PGDP managers

October – November 2016 informal Beta VM presentation review discussions conducted with DOE PPPO, PGDP personnel, DOE Contractors (summarized immediately below)

DOE – KRCEE Project Management (informal) discussions regarding Beta VM content:
- Content needs to reflect DOE activities in addition to enrichment (Missions)
  - Accomplishments relative to each Mission
- Content heavy relative to environmental impacts
  - 1 of many site Missions
  - Emerges as an activity late in Site history
- Content chronology should reflect history
  - Build up to Need for PGDP to be constructed and through operations
- Importance of PGDP process relative to scientific/industrial accomplishments
  - What is uranium enrichment needs support for general audience
  - Largest-smallest WOW factor (Buildings/infrastructure versus atoms)
- Expansion of construction accomplishments
  - Extensive scale of buildings and support infrastructure systems
  - Detailed content available but not utilized
- Response problems with page x page photograph collections (slow)
- Banner symbol (PGDP) needs text that relates to symbol
- Timeline difficult to navigate (extensive entries)

- Captions on page graphics & photos - not used to enhance or add depth to page text information

November 2016 PGDP VM Project Team implemented to include DOE, DOE contractors, PPPO, PPPO Contractors, CoD PI's, CoD Students, KRCEE, CAER

November – December 2016 photographic and historical content found in PGDP Site 'vault' released to VM Project Team following security review

December 2016 VM Project Team tasked to reorganize and add content incl. topics, text, graphics and photography to Beta VM

Announcement that CoD VM Team is graduating in May and will leave University employment

2017

January 2017

VM Project Team begins 'First Monday' Meetings to coordinate development activities

Transfer of Wordpress VM site from CoD VM Team to VM Project Team (KRCEE)

Project Team identifies and begins development of content additions for PGDP 'Missions', 'Nuclear Energy and the Atom'

DOE adds Subject Matter Expert (SME) with extensive site operations experience to VM Project Team

Linked VM Layout pdf method developed to share VM and linked information with VM Project Team
- Address problems of access and link functionality on computers behind government firewall(s) with restricted access constraints

February – May 2017

VM Project Team completes re-Organization 'flow chart' for VM content and navigation

VM Project Team identifies and begins working potential hosting issues
- Security of Wordpress code driving website
- Security of Wordpress 'tool' routines utilized to web-site components
- Long-term availability of Wordpress 'tools' as components of site code
- DOE guidelines relative to software use/deployment on government servers
- Identification of DOE site resources for release and long-term hosting

VM Project Team completes content re-organization and posting of Beta VM content in Wordpress platform.

VM Project Team completes formal review of re-organized Beta VM content (on-line)
- Content, technical, navigation and initial security review
  - Photographic content of process-component details removed

PGDP Logo revised to include identifying text

'Nuclear Energy & the Atom' background material completed and posted

Research and revisions to 'History of Paducah' completed and posted

Linked VM Layout pdf's updated monthly and distributed to VM Project Team for review, comment and as basis of monthly project team meeting proceedings.

June – August 2017

Decision made to transfer VM Wordpress platform to hyper-text machine language (html) & cascading style sheet (css) formatting

Coding of VM to html/css begins

PGDP 'Construction' and 'Buildings' content pages completed and posted

PGDP Enrichment Process – Flow diagram depicting how uranium moves thru the enrichment process developed and posted

PGDP 'Missions' developed and provided to PT for review

Timeline research revisions and additions begin. Timeline broken into four (4) focused threads related to VM topics
- History of Paducah and the Jackson Purchase
- History of Nuclear Science Leading to Development of Nuclear Energy
- PGDP Site History
- History of Environmental Regulation and PGDP Environmental Accomplishments

Decision made to utilize Northwestern University Knightlab JS Timeline as timeline development and deployment platform
- Interactive
- Allows expansion of point-in-time information into 2-3 levels of detail through text and graphics/photography captions and video
- Can be served from external web link utilizing Google spreadsheets
- Can be embedded and served from within VM site

PGDP VM Final Draft Layout and Content presentation to PPPO management scheduled for November 1, 2018

Linked VM Layout pdf updated monthly and distributed to VM Project Team for review, comment and as basis of monthly project team meeting proceedings.

<u>September – October 2017</u>

PGDP VM Content 90% complete & distributed thru Linked VM Layout pdf
- Topical sections, text, supporting graphics and photography completed
- Galleries for timelines, videos and photographs TBD
- Link pages TBD

Continued html/css coding with iterative reviews of content and functionality (Linked VM Layout pdf's)
- 40% of Wordpress Beta VM site converted, posted and functional
- @ 25% of PGDP VM Final Draft content posted and functional

First posting of select converted Beta VM content as accessible html/css website
http://www.paducahvision.org/paducahvm/ (KRCEE server development version)

Conducted two (2) dry runs of PGDP VM - PPPO management presentations
- Project Team
- PGDP Site Management

<u>November – December 2017</u>

PGDP VM Final Draft PRESENTED to PPPO management (Nov. 1, 2017)
- Presentation from available pages on website to demonstrate design and functionality
- Augmented with pages from Draft Final Linked VM Layout pdf

Continued html/css coding with iterative reviews of content and functionality
- 50% of Wordpress Beta VM site converted & posted
- @ 40% of PGDP VM Final Draft content posted

2018

<u>January – February 2018</u>

Presentation of VM Final Draft to PGDP Citizens Advisory Board scheduled for March 15, 2018

PGDP VM Content 95% complete & distributed thru Linked VM Layout pdf
- Topical sections, text, supporting graphics and photography completed
- Galleries for timelines, videos and photographs TBD
- Link pages TBD

Continued html/css coding with iterative reviews of content and functionality
- 60% of Wordpress Beta VM site converted & posted
- @ 50% of PGDP VM Final Draft content posted

Conducted VM Tech Issue Conference Calls with PPPO, PGDP contractors to address responsibilities for hosting and long-term management VM website

March 2018

Conducted dry run of PGDP VM CAB presentation with PGDP site management

VM Final Draft Presented to PGDP Citizens Advisory Board March 15, 2018
- Presented from available pages on website to demonstrate content, design and functionality

Continued html/css coding with iterative reviews of content and functionality
- 100% of Wordpress Beta VM site converted & posted
- @ 70% of PGDP VM Final Draft content posted

VM Tech Issue Conference Calls
- Established official DOE VM online presence
- Purchased domain name
  - http://pgdpvirtualmuseum.org/
- Hosting through GoDaddy

Final VM Project Team Review conducted thru posted website and Linked VM Layout pdf

April – May 2018

Extensive Factual Accuracy Review (FAR) conducted by DOE-PPPO

Compiled FAR Review comments received May 25th, 2018

Continued html/css coding with iterative reviews of content and functionality
- 98% PGDP VM Final Draft content posted
  - 'Explore the Plant' interactive site building tour revisions underway
  - Gallery photos revisions underway

June – July 2018

Factual Accuracy Review (FAR) revisions posted to website

Final VM Website posted online

Site (PGDP) security review and revisions completed

Final PGDP VM delivered to DOE-PPPO