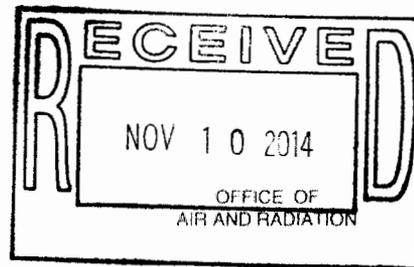




UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

ENTERED

NOV 10 2014



Mr. J. R. Stroble  
Manager, TRU Sites and Transportation Division  
Carlsbad Field Office  
U.S. Department of Energy  
P.O. Box 3090  
Carlsbad, NM 88221-3090

Dear Mr. Stroble:

On May 30, 2014, the Carlsbad Field Office (CBFO) requested a T1 change to add visual examination (VE) for summary category group S4000 (soils) and S5000 (debris) contact-handled (CH) transuranic (TRU) waste. EPA evaluated the proposed T1 change by reviewing Oak Ridge national Laboratory-Central Characterization Project (ORNL-CCP) documents and conducting an onsite inspection of VE at ORNL on August 5-6, 2014.

EPA has determined that the VE process used by ORNL-CCP is adequate for characterization of S4000 and S5000 CH TRU waste in 55-gallon drums at ORNL-CCP. This approval makes one change to the Tier 1 requirements for ORNL-CCP, for the VE process which is in bold in Table 1 of the enclosed inspection report (Docket No. A-98-49; II-A4-192; EPA eDocket # EPA-HQ-OAR-2001-0012-0443).

If you have any questions regarding this approval, please contact Ed Felcorn at (202) 343-9422 or Rajani Joglekar at (202) 343-9462.

Sincerely,

Tom Peake, Director  
Center for Waste Management and Regulations

Enclosure



cc: Electronic Distribution  
Alton Harris, DOE HQ EM  
Joe Franco, CBFO  
Norma Castaneda, CBFO  
Marcus Pinzel, CBFO  
Ed Gulbransen, CCP  
Ricardo Maestas, NMED  
Trais Kliphius, NMED  
Raymond Lee, EPA HQ  
Site Documents

**DOCKET NO: A-98-49; II-A4-193**  
**EPA eDocket NO: EPA-HQ-OAR-2001-0012-0443**

**WASTE CHARACTERIZATION REPORT**

**TIER 1 CHANGE EVALUATION:  
VISUAL EXAMINATION OF CONTACT HANDLED TRANSURANIC WASTE  
PERFORMED BY THE CENTRAL CHARACTERIZATION PROJECT  
AT THE OAK RIDGE NATIONAL LABORATORY**

**August 5–6, 2014**

**U.S. Environmental Protection Agency  
Office of Radiation and Indoor Air  
Center for Waste Management and Regulations  
1200 Pennsylvania Avenue, NW  
Washington, DC 20460**

**November 2014**

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Attachment B Visual Examination for Contact-Handled Waste Checklist

## ABBREVIATIONS AND ACRONYMS

AK	acceptable knowledge
AKE	Acceptable Knowledge Expert
AKSR	acceptable knowledge summary report
BDR	batch data report
CBFO	Carlsbad Field Office
CCP	Central Characterization Program
CFR	Code of Federal Regulations
CH	contact-handled
CIS	characterization information summary
DOE	U.S. Department of Energy
DWAS	Digital Waste Assay System
EA	Expert Analyst
EPA	U.S. Environmental Protection Agency
IPAN	imaging passive active neutron
ISOCS	In Situ Object Counting System
ITR	Independent Technical Reviewer
LOQI	list of qualified individuals
MCS	Mobile Characterization Services
MILCC2	Mobile ISOCS Large Container Counter-2
NCR	nonconformance report
NDA	nondestructive assay
NDE	nondestructive examination
NFS	Nuclear Fuel Services
OJT	on-the-job training
ORNL	Oak Ridge National Laboratory
QA	quality assurance
QAPP	Quality Assurance Project Plan
RH	remote-handled
RTR	real-time radiography
SC&A	S. Cohen and Associates (SC&A, Inc.)
SCG	summary category group

SGS	segmented gamma scanner
SME	subject matter expert
SPM	Site Project Manager
T1	Tier 1
T2	Tier 2
TRU	transuranic
VE	visual examination
VEE	visual examination expert
WDS	Waste Data System
WIPP	Waste Isolation Pilot Plant
WMC	waste matrix code
WMP	waste material parameters
WSPF	waste stream profile form

## 1.0 INTRODUCTION

This report supports the U.S. Environmental Protection Agency's (EPA's) approval of a Tier 1 (T1) change for the Central Characterization Program (CCP) to resume use of visual examination (VE) for characterization of contact-handled (CH) transuranic (TRU) waste at the Oak Ridge National Laboratory (ORNL). Specifically, ORNL-CCP is approved to resume VE characterization for heterogeneous debris [summary category group (SCG) S5000] and soils (SCG S4000). In accordance with Title 40 of the Code of Federal Regulations (40 CFR) 194.8(b), EPA conducted a baseline inspection of CCP's waste characterization program for CH TRU wastes at the U.S. Department of Energy's (DOE's) ORNL in Oak Ridge, TN, in 2008. As a result, EPA approved the ORNL-CCP CH TRU waste characterization program (see EPA Docket No. A-98-49, II-A4-103).

On March 24, 2010, EPA granted T1 approval for ORNL-CCP to characterize CH TRU S4000 and S5000 waste using VE (see EPA Docket No. A-98-49, II-A4-125). ORNL-CCP suspended operations for a time and resumed them in 2014. Therefore, on February 4–6, 2014, EPA conducted a continued compliance inspection of the ORNL-CCP waste characterization program and approved the resumption of the ORNL-CCP CH and remote-handled (RH) TRU waste characterization programs (see EPA Docket No. A-98-49, II-A4-186). However, EPA did not include the CH VE process in the 2014 continued compliance inspection scope because ORNL-CCP was not prepared to use or demonstrate the process. EPA did not observe and review the CH VE process during the continued compliance inspection, therefore, EPA identified resumed use of the CH VE process as a separate T1 evaluation. EPA's reviews and approvals of ORNL-CCP's CH waste characterization program are listed in Attachment A.

On May 30, 2014, the Carlsbad Field Office (CBFO) requested a T1 change to add VE for SCG S4000 and S5000 CH TRU waste. EPA evaluated the proposed T1 change by reviewing ORNL-CCP documents and conducting an onsite inspection of VE at ORNL on August 5–6, 2014. EPA determined that the VE process is technically adequate for characterizing S4000 and S5000 CH TRU waste.

Based on the results of this T1 evaluation, EPA revised the VE T1 designation to reflect EPA's approval of VE for SCG S4000 and S5000 CH TRU waste and state explicitly that any use of VE to characterize CH TRU homogenous solid (SCG S3000) is a T1 change. Table 1 shows the T1 change in bold text. T1 and Tier 2 (T2) changes that were initiated during the CH baseline and as modified as a result of subsequent T1 and continued compliance approvals remain in effect. The language in Table 1 regarding AK documentation applies to all ORNL-CCP waste streams.

EPA did not identify any findings or concerns during this T1 evaluation.

This report serves as EPA's public notification of the results of the proposed T1 change and its evaluation. This information will be provided through the EPA website and by emails to the WIPPNEWS list, in accordance with 40 CFR 194.8(b)(3).

**of Contact-Handled Transuranic Waste Characterization Processes Implemented by ORNL-CCP  
13–15, 2007, Baseline Inspection and Subsequent Inspections and Evaluations, Updated October 2014)**

<b>ORNL-CCP CH Waste Characterization Process – T1 Changes</b>	<b>ORNL-CCP CH Waste Characterization Process – T2 Changes*</b>
<p>new waste category other than retrievably stored debris, liquid and solids (i.e., any type of newly generated waste) management</p>	<p>Submission of a list of active ORNL-CCP CH AKEs and SPMs</p> <p>Notification to EPA upon completion of or substantive modification** to:</p> <ul style="list-style-type: none"> <li>• AK accuracy reports (annually, at a minimum)</li> <li>• AK-AK and AK-NDA/NDE Discrepancy Resolution Reports</li> <li>• WSPFs and related attachments (e.g., CIS) for all new or modified waste streams, including change notices</li> <li>• AKSRs (new and updated versions)</li> <li>• CCP-TP-005, Attachments 4, 6, 7 and 8 and/or associated memoranda, including “Add Container” memoranda</li> <li>• Site AK procedures requiring CBFO approval</li> </ul>
<p>new equipment or substantive physical modifications** to approved equipment</p> <p>change in or changes to approved calibration range for approved equipment</p> <p>relocation of MILCC2 onsite or other activities that require system modification</p> <p>addition of new measurement configurations or container types</p>	<p>Submission of a list of ORNL-CCP NDA operators, EAs and ITRs that performed work during the previous quarter</p> <p>Notification to EPA upon substantive modification** to:</p> <ul style="list-style-type: none"> <li>• Software for approved equipment</li> <li>• Operating ranges upon CBFO approval</li> <li>• Site NDA procedures requiring CBFO approval</li> </ul> <p>Notification to EPA upon successful calibration verification of MILCC2 following on-site relocation or other equipment changes</p>
	<p>Submission of a list of ORNL-CCP RTR operators and ITRs that performed work during the previous quarter</p> <p>Notification to EPA upon:</p> <ul style="list-style-type: none"> <li>• New equipment or substantive physical modifications** to approved equipment</li> <li>• Substantive modification** to site RTR procedures requiring CBFO approval</li> </ul>
<p><b>VE to characterize homogenous solid CH TRU waste (000)</b></p>	<p>Submission of a list of ORNL-CCP VE operators, VE Experts and ITRs that performed work during the previous quarter</p>
<p>management</p>	<p>Notification to EPA upon substantive modification** to site WDS procedures requiring CBFO approval</p>

Modifications to existing T1s or T2s are in **bold** text; T1s or T2s that were only revised for style are not shown in bold.  
 Reports are submitted to EPA every three months.

to a change with the potential to affect ORNL-CCP's CH waste characterization processes or documentation of them, excluding changes ent, safety and health; nuclear safety; or the Resource Conservation and Recovery Act, or that are editorial in nature or are required to may request copies of new references that DOE adds during a document revision.

## **2.0 PURPOSE OF TIER 1 EVALUATIONS**

Certain changes to the waste characterization activities from the date of the site's baseline inspection must be reported to and, if applicable, approved by EPA according to the tiering requirements set forth in 40 CFR 194.8 regulations and incorporated into the ORNL-CCP baseline final report (see EPA Docket No. A-98-49, II-A4-103).

Under the changes to 40 CFR 194.8 promulgated in the July 16, 2004, Federal Register notice (Vol. 69, No. 136, pages 42571–42583), EPA must perform a single baseline inspection of a TRU waste generator site's waste characterization program. The purpose of EPA's baseline inspection is to approve the site's waste characterization program, based on the demonstration that the program's components, with applicable conditions and limitations, can adequately characterize TRU wastes and comply with the regulatory requirements imposed on TRU wastes destined for disposal at the WIPP.

Following EPA's baseline approval, EPA is authorized to evaluate and approve changes, if necessary, to the site's approved waste characterization program by conducting additional inspections under the authority of 40 CFR 194.24(h). Changes requiring EPA notification and approval prior to implementation (T1) and those requiring post-implementation notification (T2) are identified in the site-specific baseline inspection reports and subsequent T1 evaluation reports. When evaluating proposed T1 changes for approval, EPA may conduct a site inspection to observe implementation of the change or can opt to conduct a desktop review of information provided specific to a change. DOE may choose to characterize and dispose of any previously approved TRU waste using processes, procedures or equipment implemented as T2 changes at risk of subsequent EPA disapproval.

## **3.0 PURPOSE OF THIS REPORT**

This report presents the results of EPA's evaluation of a T1 change to allow ORNL-CCP to resume use of VE for characterization of SCG S4000 and S5000 CH TRU waste. This report documents the basis for EPA's approval decision and explains the results of the technical evaluation of the process, including any limitations. EPA's approval decision regarding resumed use of VE has been conveyed to DOE separately by letter. EPA will also announce the decision on its website at [www.epa.gov/radiation/wipp](http://www.epa.gov/radiation/wipp), in accordance with 40 CFR 194.8(b)(3).

Documents provided by CBFO for this evaluation and listed in Section 6.2 of this report can be requested from CBFO at the following address:

U.S. Department of Energy  
Carlsbad Field Office  
TRU Sites and Transportation Division  
P.O. Box 3090  
Carlsbad, NM 88221-3090

## **4.0 SCOPE OF REVIEW**

The scope of EPA's T1 evaluation is the VE process used to characterize CH TRU SCG S4000 and S5000 waste. EPA evaluated this proposed change request in accordance with 40 CFR

194.8(b) to assess the technical adequacy, implementation and effectiveness of ORNL-CCP's VE process to characterize CH TRU S4000 and S5000 waste. EPA evaluated personnel qualifications and training, and operating procedures to assess the technical adequacy of the VE process for CH TRU waste.

## 5.0 EVALUATION PERSONNEL

Table 2 lists all personnel involved in this T1 evaluation, along with their professional affiliations and T1 evaluation functions.

**Table 2. Evaluation Personnel**

<b>Name</b>	<b>Affiliation &amp; Function</b>
Ed Feltcorn	Lead Inspector, U.S. EPA
Dorothy Gill	Technical Evaluator – Visual Examination, SC&A
Anthony Harley	CCP, Visual Examination Expert
Shelley Martinez	CCP, Cognizant Engineer
Chuck (David) Wallace	CCP, Visual Examination Operator/Independent Technical Reviewer
Jason Cofer	CCP, Visual Examination Operator/Independent Technical Reviewer
Irene Joo	URS, RH Program Manager

## 6.0 TECHNICAL EVALUATION OF VISUAL EXAMINATION

On August 5–6, 2014, EPA evaluated the CH VE operations at ORNL-CCP. The evaluation included review of documents and records, observation of VE operations and interviews with ORNL-CCP VE personnel.

### **Records and Documentation Reviewed**

Prior to and during the on-site visit, the EPA inspectors reviewed the following documents and other VE-related records:

- CCP-TP-113, CCP Standard Contact-Handled Waste Visual Examination, Revision 18, September 25, 2013.
- CCP-PO-001, CCP Transuranic Waste Characterization Quality Assurance Project Plan, Revision 21, May 31, 2013.
- CCP-QP-002, CCP Training and Qualification Plan, Revision 38, August 7, 2014.
- CCP-QP-005, CCP TRU Nonconforming Item Reporting and Control, Revision 24, July 29, 2014
- CCP-TP-001, CCP Project Level Data Validation and Verification, Revision 21, June 6, 2013.
- CCP-AK-ORNL-002, Acceptable Knowledge Report for Waste Stream OR-REDC-CH—HET, Revision 3, April 29, 2014.
- Qualification Cards for selected VE operators.

- Qualification Card for VE Expert (VEE).
- VEE appointment letter dated October 14, 2013.
- List of Applicable Waste Streams Qualified, dated October 14, 2013, for VEE.
- LOQI for VE personnel dated July 9, 2014.
- ORNL NDE Personnel Waste Streams Qualified List dated July 9, 2014.
- CH VE Batch Data Report (BDR) Nos. ORVECH0101, ORVECH0102, ORVECH0106, ORVECH0107, ORVECH0109.
- Completed Attachment 2, CCP Waste Visual Examination Data Form, for container X10C0402896F.
- Nonconformance report (NCR) No. NCR-ORNL-0159-14.
- Nonconformance report (NCR) No. NCR-ORNL-0702-14.

EPA has reviewed ORNL-CCP VE documents on many previous inspections. EPA determined that the procedures continue to provide adequate, appropriate and complete instructions for performance of applicable VE processes and operations. There were no concerns regarding the adequacy of the VE documents.

### **Observation of CH VE Operations**

EPA observed the VE event in Building 7880 at the ORNL Transuranic Waste Processing Center. The VE event used container No. X10C0402896F from SCG S5000 Waste Stream OR-REDC-CH-HET. ORNL site personnel performed the actual handling of the waste in a glove-box under the direction of ORNL-CCP VE personnel. The ORNL-CCP personnel examined the waste, identified each waste item as required and recorded the process. Upon completion of the VE inspection, ORNL placed the waste in a new 55-gallon drum, output container No. X10C0402896F1. EPA reviewed the completed data sheets for the demonstration container and determined that they contained all required information. There were no concerns regarding ORNL-CCP's performance and documentation of VE for CH TRU wastes.

ORNL-CCP CH VE operations and processes are performed and recorded in accordance with applicable requirements of 40 CFR Part 194 and ORNL-CCP procedures.

## **7.0 CONCLUSIONS**

### **Changes to Tiering**

Based on the results of this T1 evaluation, EPA revised the VE T1 designation to reflect EPA's approval of VE for SCG S4000 and S5000 CH TRU waste to state explicitly that any use of VE to characterize CH TRU homogenous solid (SCG S3000) is a T1 change (see Table 1).

## **Approval**

During this T1 change evaluation, EPA examined the use of the VE process to characterize SCG S4000 and S5000 CH TRU waste. Based on the results of this evaluation, EPA approves this T1 change consistent with the limitations specified in this report.

## ATTACHMENT A

### APPROVAL SUMMARY FOR ORNL-CCP CONTACT-HANDLED WASTE CHARACTERIZATION PROGRAM

Approved Activity	EPA Inspection Number, Approval Dates	EPA Docket Number
ORNL-CCP CH Baseline Approval	EPA-ORNL-CCP-CH-11.07-8, August 21, 2008	A-98-49, II-A4-103
T1 Change – Extension of the Calibration and Density Ranges for the SGS NDA System	October 8, 2008	A-98-49; II-A4-108
T1 Change – Extension of the Passive Mode Calibration Range for the DWAS/IPAN SGS	January 8, 2009	A-98-49, II-A4-109
T1 Change – Addition of SCG S4000	October 7, 2009	A-98-49, II-A4-117
Unannounced Continued Compliance Inspection	November 23, 2009	A-98-49, II-A4-121
T1 Change – Addition of the MCS IQ3 NDA System and Visual Examination	March 30, 2010	A-98-49, II-A4-125
T1 Change – Addition of NFS Trench B Soils to Waste Stream OR-NFS-CH-SOIL	March 23, 2011	A-98-49; II-A4-144
Continued Compliance Inspection	June 18, 2014	A-98-49; II-A4-186
T1 Change – Addition of MILCC2 NDA System	October 21, 2014	A-98-49; II-A4-192

## ATTACHMENT B

### VISUAL EXAMINATION FOR CONTACT-HANDLED WASTE CHECKLIST

NL-T1-2014

Inspection Date: August 5-6, 2014

Execution of Procedures	Objective Evidence and Additional Comments
<p><b>Formal training elements include:</b> project requirements, container identification and labeling, applicable state and federal regulations</p> <p><b>Site-specific training program:</b> OJT, identification of summary category groups, WMPs, packaging configurations, residual liquids</p>	<p>EPA has reviewed the CCP training procedure on numerous occasions and determined it to be comprehensive and fully implemented. The training program for VE personnel includes the required elements of examination, OJT, and formal training.</p> <p><b>Objective evidence:</b></p> <ol style="list-style-type: none"> <li>1. Qualification Cards for selected VE operators.</li> <li>2. VEE appointment letter dated October 14, 2013.</li> <li>3. List of Applicable Waste Streams Qualified for VEE dated October 14, 2013.</li> <li>4. LOQI for VE personnel dated July 9, 2014.</li> <li>5. ORNL NDE Personnel Waste Streams Qualified List dated July 9, 2014.</li> </ol>
<p>To become qualified, the CHVE operator must pass a comprehensive written test with an 80 percent or better grade that addresses VE operations, documentation, characterization, formal training elements, and procedural elements. VE Operators must demonstrate capability in the presence of the site VEE during OJT. However, the formal and OJT training is conducted by a qualified SME.</p>	<p>EPA reviewed the Qualification Cards for several VE operators and determined that the operators were correctly trained and the training records were complete.</p> <p><b>Objective evidence:</b></p> <ol style="list-style-type: none"> <li>1. Qualification Cards for selected VE operators.</li> <li>2. VEE appointment letter dated October 14, 2013.</li> <li>3. List of Applicable Waste Streams Qualified for VEE dated October 14, 2013.</li> <li>4. LOQI for VE personnel dated July 9, 2014.</li> <li>5. ORNL NDE Personnel Waste Streams Qualified List dated July 9, 2014.</li> </ol>
<p>VEE designation is documented</p> <p>VEE has knowledge of the CH TRU waste being characterized</p> <p>Responsible for overall direction and implementation of VE at the facility</p> <p><b>Certification Plan</b> specifies the selection, qualification, and training requirements of VEE</p>	<p>The VEE is available on-site but is not necessarily present for all VE events. The VEE is knowledgeable with regard to the VE processes employed and the waste streams examined.</p> <p><b>Objective evidence:</b></p> <ol style="list-style-type: none"> <li>1. Qualification Card for VEE.</li> <li>2. VEE appointment letter dated October 14, 2013.</li> <li>3. List of Applicable Waste Streams Qualified for VEE dated October 14, 2013.</li> <li>4. LOQI for VE personnel dated July 9, 2014.</li> <li>5. ORNL NDE Personnel Waste Streams Qualified List dated July 9, 2014.</li> </ol>

Execution of Procedures	Objective Evidence and Additional Comments
<ul style="list-style-type: none"> <li>• 100% of containers will be subject to VE at the time of packaging</li> <li>• Waste Stream Description and WMC verified</li> <li>• Presence/absence of prohibited items confirmed</li> <li>• Two operators used even if audio/visual recording of VE is generated</li> </ul>	<p>EPA observed the VE event for S5400 container No. X10C0402896F (output container X10C0402896F1) from Waste Stream OR-REDC-CH-HET. ORNL-CCP operators performed the VE processes in accordance with CCP-TP-113 and recorded all required VE data.</p> <p><b>Objective evidence:</b></p> <ol style="list-style-type: none"> <li>1. Completed Attachment 2, CCP Waste Visual Examination Data Form, for container No. X10C0402896F.</li> <li>2. Qualification Cards for VE operators performing the VE demonstration.</li> <li>3. VEE appointment letter dated October 14, 2013.</li> <li>4. List of Applicable Waste Streams Qualified, dated October 14, 2013, for VEE.</li> <li>5. LOQI for VE personnel dated July 9, 2014.</li> <li>6. ORNL NDE Personnel Waste Streams Qualified List dated July 9, 2014.</li> <li>7. BDR Nos. ORVECH0101, ORVECH0102, ORVECH0106, ORVECH0107, ORVECH0109.</li> </ol>
<p>Operators were able to describe how they initiate a corrective action</p>	<p>EPA reviewed NCR Nos. NCR-ORNL-0159-14 and NCR-ORNL-0702-14 that were initiated for containers in BDR No. ORVECH0101. These NCRs were initiated, processed and closed in accordance with CCP procedures.</p> <p><b>Objective evidence:</b></p> <ol style="list-style-type: none"> <li>1. NCR-ORNL-0159-14.</li> <li>2. NCR-ORNL-0702-14.</li> <li>3. BDR Nos. ORVECH0101, ORVECH0102, ORVECH0106, ORVECH0107, ORVECH0109.</li> </ol>
<ul style="list-style-type: none"> <li>• ITR review Attachment 2</li> <li>• SPM review Attachment 3</li> </ul>	<p>EPA verified that the required reviews were performed for the BDRs listed below. The ITR and SPM reviews had been completed and signed by the applicable personnel.</p> <p><b>Objective evidence:</b></p> <ol style="list-style-type: none"> <li>1. Completed Attachment 2, CCP Waste Visual Examination Data Form, for container No. X10C0402896F.</li> <li>2. BDR Nos. ORVECH0101, ORVECH0102, ORVECH0106, ORVECH0107, ORVECH0109.</li> </ol>

Execution of Procedures	Objective Evidence and Additional Comments
<p>Lifetime/QA records – Attachments 1-5, Copy of NCRs</p> <p>QA/nonpermanent records – VHS tape or DVD (primary and backup)</p>	<p>ORNL-CCP was able to provide all documents and records requested by EPA.</p> <p><b><u>Objective evidence:</u></b></p> <ol style="list-style-type: none"> <li>1. Completed Attachment 2, CCP Waste Visual Examination Data Form, for container No. X10C0402896F.</li> <li>2. Qualification Cards for VE operators performing the VE demonstration.</li> <li>3. VEE appointment letter dated October 14, 2013.</li> <li>4. List of Applicable Waste Streams Qualified for VEE, dated October 14, 2013.</li> <li>5. LOQI for VE personnel dated July 9, 2014.</li> <li>6. ORNL NDE Personnel Waste Streams Qualified List dated July 9, 2014.</li> <li>7. BDR Nos. ORVECH0101, ORVECH0102, ORVECH0106, ORVECH0107, ORVECH0109.</li> </ol>