Topic 1: PCGenesis Backup / Reorganization / Restore Checklist

BACKUP GUIDELINES		
✓	Step	Action
	1	Include a **full backup** of *K:*.** in the site's standard server backup process ▸ Recommend **full backup** of *K:*.** <u>every night</u> if possible • Minimum of one full backup of *K:*.** every week **(Required)** • Retain at least 4 weeks of *K:*.** **(Required)**
	2	Daily backup of *K:\SECOND*.** <u>and</u> *K:\PCGSQLdb*.** **(Required)** • Use of CD, DVD, or USB is recommended • Nightly backup following each work day • Nightly media may remain under control of PCG administrator • Proper security and offsite storage measures **(Required)** • Retain daily backups of *K:\SECOND*.** <u>and</u> *K:\PCGSQLdb*.** for 4 weeks **(Required)** • Retain one daily backup each month of *K:\SECOND*.** <u>and</u> *K:\PCGSQLdb*.** for at least one year **(Required)**
	3	PCGenesis data is <u>split</u> between files contained in the directory *K:\SECOND* and the *SQL Server* database tables located in *K:\PCGSQLdb*. Therefore, it is very important to backup *K:\PCGSQLdb*.** <u>and</u> *K:\SECOND*.** during the nightly backup. ==One directory cannot be backed up without the other directory, and they must be maintained together.==

		BACKUP GUIDELINES
✓	**Step**	**Action**

	4	To create a complete backup of the PCGenesis system, the following directories need to be backed up together.
		
		Components needed for a disaster recovery:
		
		K:\SECOND PCGenesis payroll and financial data
		K:\PCGSQLdb The *SQL Server* database data for:
		      • **PCGenesisDB** – the PCGenesis database
		      • **VQueueDB** – the VerraDyne database
		K:\UCTARCHIVE Archived PCGenesis reports in pdf format
		K:\UCTPRINT PCGenesis report files currently in the print queue
		
		These 4 directories contain data and should be backed up at the same time as the daily backup of *K:\SECOND*.** data (especially if the archive feature of the *VerraDyne Print Manager* is being used).

	5	The database files are in the following location for ***Windows Server 2012 or 2016 or 2019 or 2022*** : `K:\PCGSQLdb\MSSQL13.SQLEXPRESSPCG\MSSQL\DATA\`
		
		  • `PCGenesisDB.mdf`
		  • `PCGenesisDB_log.ldf`
		
		  • `VQueueDB.mdf`
		  • `VQueueDB_log.ldf`
		
		  • `PCG_D_DB.mdf`
		  • `PCG_D_DB_log.ldf`
		
		  • `PCG_Q_DB.mdf`
		  • `PCG_Q_DB_log.ldf`
		
		  • `PCG_Master.mdf`
		  • `PCG_Master_log.ldf`
		
		  • `PCG_LOG_DB.mdf`
		  • `PCG_LOG_DB_log.ldf`

	6	Do not allow PCGenesis backups and reorganizations to run at the same time.

	BACKUP GUIDELINES	
✓	**Step**	**Action**
	7	Backup considerations: • The *VerraDyne Print Manager* automatically runs a clean-up process every night at midnight which should take approximately 15 minutes to run. • Since this process runs at midnight, make sure that the PCGenesis backups and reorganizations are not scheduled to overlap this timeframe. • Overlapping processes may cause problems with the clean-up and backups.
	8	**Prior** to running a full backup or a daily backup of the **K:** directories… • School districts must stop the *VerraDyne Queue Service* and the *SQL Express* services • Otherwise, the backup will not run to completion. • The following commands should be entered in the command prompt for *Windows* or added to the backup bat file to stop the services. **Prior** to running a full or a daily backup of the **K:** directories… • **NET STOP VQueueService** • **NET STOP MSSQL$SQLEXPRESSPCG**
	9	**After** the backup has completed, the following commands can be executed… • The following commands should be entered in the command prompt for *Windows* or added to the backup bat file to start the services. • **NET START MSSQL$SQLEXPRESSPCG** • Make sure to **wait at least 2 minutes** for **SQLEXPRESSPCG** to start before trying to start **VQueueService.** • **NET START VQueueService**

✓	Step	REORGANIZATION GUIDELINES
		Action
	1	Create scheduled task for ***K:\BACKUP\PCGREORG.BAT*** **(Required)** • Schedule nightly after backup to finish prior to 6:00am. Allow up to 60 minutes processing time. • **SQL Server (SQLEXPRESSPCG)** must be running. • Requires ROBOCOPY which should be included with Windows Sever 2008 R2 64bit - Verify available in ***C:\WINDOWS\SYSTEM32\ROBOCOPY.EXE*** - If missing, run ***K:\DOWNLOAD\2003 RESOURCE KIT\rktools.exe*** to install ROBOCOPY • The REORG task will create a *Reorg Recap* report in ***K:\SECOND\#SPLPRT\REOGnnnn*** • The REORG task creates the following temporary restore points: - `K:\SECONDX` - `K:\PCGSQLdb\MSSQL13.SQLEXPRESSPCG\MSSQL\Backup\` `PCGenesisDBX.BAK`
	2	Review the *Technical System Operations Guide, Section B: PCGenesis Backup / Reorganization / Restore, Topic 2: How To Schedule the PCGenesis Reorganization Job* for additional information.

	RESTORE WHAT AND WHEN	
✓	**Step**	**Action**
	1	**Events & Actions that Cause Problems:** ‣ Power outage ‣ Operator error ‣ Partial or duplicate postings ‣ Paycheck / direct deposit misprint ‣ File lock ‣ Operator selects **Ctrl-Alt-Del** (*Never, Never, Never, Never DO THIS!!!!!*)
	2	**When to Restore:** Problem: ‣ Data has been corrupted ‣ Partial or duplicate postings have occurred ‣ Processes have not completed ‣ System will not allow continuation of processing ‣ Files are missing Solution: ‣ Restore from recent backup or restore point ***Always call the Help Desk for assistance with any restore.***
	3	**What to Restore:** ***That depends on circumstances which is why you need to call the Help desk!!!*** ***Normally it is necessary to replace all of K:\SECOND and K:\PCGSQLdb!!!***
	4	<u>**SYSTEM:**</u> The *SYSTEM* directory contains all of the PCGenesis program modules. ‣ A backup of *SYSTEM* is made during the full backup of *K:*.** ‣ *SYSTEM* (or part of *SYSTEM*) should be restored (from CD/DVD/USB) if a process will not complete because a program file is missing or corrupt. ‣ Individual program files may be restored without harming the integrity of the PCGenesis system. ‣ If a release has been installed since the last *SYSTEM* backup, the release may need to be reinstalled, or use a backup of *SYSTEM* created following the installation of a release.

✓	Step	Action
		RESTORE WHAT AND WHEN (Continued)
	5	<u>**VQUEUE:**</u> The *VQUEUE* directory contains all of the *VerraDyne Print Manager* program modules.
	6	PCGenesis data is <u>split</u> between files contained in the directory ***K:\SECOND*** and the *SQL Server* database tables located in ***K:\PCGSQLdb***. Therefore, it is very important to backup ***K:\PCGSQLdb*.**** <u>and</u> ***K:\SECOND*.**** during the nightly backup. <mark>One directory cannot be backed up without the other directory, and they must be maintained together.</mark>
	7	<u>**SECOND:**</u> The *SECOND* directory contains the VISION files of the financial and payroll data for each site. ▸ A backup of *SECOND* is made during the daily backup of ***K:\ SECOND *.**** ▸ A backup of *SECOND* is created each night and is stored on CD\DVD\USB. ▸ *SECOND* backups from the nightly media should only be restored if a restore of *SECONDL*, *SECONQ, SECONDX,* or *SECONDY* will not correct the problem.

	8	<u>**PCGSQLdb:**</u> The *SQL Server* database data for the PCGenesis database (**PCGenesisDB**) and the *VerraDyne Print Manager* (**VQueueDB**).
		▸ A backup of *PCGSQLdb* is made during the daily backup of ***K:\ PCGSQLdb *.****
		▸ A backup of *PCGSQLdb* is created each night and is stored on CD\DVD\USB.
		▸ *PCGSQLdb* backups from the nightly media should only be restored if a restore of *PCGenesisDBL.BAK*, *PCGenesisDBQ.BAK*, *PCGenesisDBX.BAK* or *PCGenesisDBY.BAK* will not correct the problem.
		▸ The system automatically creates restore points of the *SQL Server* PCGenesis database (**PCGenesisDB**) at several points during processing:
		`K:\PCGSQLdb\MSSQL13.SQLEXPRESSPCG\MSSQL\Backup\PCGenesisDBY.BAK`
		`K:\PCGSQLdb\MSSQL13.SQLEXPRESSPCG\MSSQL\Backup\PCGenesisDBX.BAK`
		`K:\PCGSQLdb\MSSQL13.SQLEXPRESSPCG\MSSQL\Backup\PCGenesisDBQ.BAK`
		`K:\PCGSQLdb\MSSQL13.SQLEXPRESSPCG\MSSQL\Backup\PCGenesisDBL.BAK`

	9	<u>**UCTARCHIVE:**</u> The *UCTARCHIVE* directory contains <u>all</u> of the PCGenesis archived reports. This directory is important if using *VerraDyne Print Manager* to archive reports.
	10	<u>**UCTPRINT:**</u> The *UCTPRINT* directory contains <u>all</u> of the PCGenesis reports that are currently in the *VerraDyne Print Manager*.

RESTORE WHAT AND WHEN (Continued)		
✓	Step	Action
	11	**SECONDL and PCGenesisDBL.BAK:** The *SECONDL* directory is a backup of *SECOND* that is made just before the *Enhanced Substitute Pay and Employee Leave* data is posted, prior to executing *Calculate Payroll & Update YTD (Final)* (**F4**). ‣ Restore from *SECONDL* is possible only if the *Enhanced Substitute Pay and Employee Leave* has been implemented at the site. ‣ Restore from *SECONDL* if a problem occurs prior to *Calculate Payroll & Update YTD (Final)*, or during the posting of the *Enhanced Substitute Pay and Employee Leave* data.
	12	**SECONQ and PCGenesisDBQ.BAK:** The *SECONQ* directory is a backup of *SECOND* that is made just before payroll is posted to earning history during the payroll process (**F13**). ‣ Restore from *SECONQ* if a problem occurs during posting to financial (**F14**). ‣ Also restore from *SECONQ* if a problem occurs after posting (**F14**) but before any other financial or payroll work has been done.
	13	**SECONDX and PCGenesisDBX.BAK:** The *SECONDX* directory is a backup of *SECOND* that is made during the nightly Reorganization (Reorg) process. ‣ If a restore of *SECOND* is needed from the previous day, *SECONDX* should be used.
	14	**SECONDY and PCGenesisDBY.BAK:** The *SECONDY* directory is a backup of *SECOND* that is made just before the month or year-end financial close (F1, F9, F21). ‣ Restore from *SECONDY* if a problem occurred during the month-end or year-end financial close procedure.
	15	**PAYDATA and PAY database tables:** The *PAYDATA* directory (inside of the *SECOND* directory) contains the VISION payroll files for the system. ‣ A backup of *PAYDATA* is created each night and is stored on CD/DVD/USB. ‣ *PAYDATA* should be restored only if a restore of *PAYDATAQ* or *PAYDATAD* will not correct the problem. (The *PAYDATA* directory may be obtained from *SECONDX\PAYDATA* or *SECONQ\PAYDATA* as appropriate). *Always contact the Help Desk before restoring PAYDATA only!* *Restoring only PAYDATA may cause the payroll data to become out of sync with financial data, CPI data, personnel data, etc. resulting in more problems than it solves, so PROCEED WITH CAUTION.*

✓	Step	Action
		RESTORE WHAT AND WHEN (Continued)
	16	**PAYDATAQ and PAYQ database tables**: The ***PAYDATAQ*** directory (inside of the ***SECOND*** directory) is a backup of ***PAYDATA*** that is made just before *Calculate Payroll & Update YTD (Final)* (**F4**). ‣ Restore from ***PAYDATAQ*** if a problem occurs during check printing but before posting to payroll earnings history (**F13**). ‣ Do <u>not</u> restore ***PAYDATAQ*** if payroll earnings history (**F13**) has already been posted or if *Update Budget Files with Current Pay* (**F14**) has already processed.
	17	**PAYDATAD and PAYD database tables:** The ***PAYDATAD*** directory (inside of the ***SECOND*** directory) is a backup of ***PAYDATA*** that is made just <u>after</u> checks print (**F5**) and <u>before</u> direct deposits print. ‣ Restore from ***PAYDATAD*** if a problem occurs during or after printing direct deposits but before posting to payroll earnings history (**F13**). ‣ Do <u>not</u> restore ***PAYDATAD*** if payroll earnings history (**F13**) has already been posted or if *Update Budget Files with Current Pay* (**F14**) has already processed.
	18	**SANDQ database tables:** The ***SAND/Q*** database tables are a backup of ***SANDBOX*** that is made just <u>before</u> a new Budget SANDBOX is created. ‣ Restore from ***SAND/Q*** database tables if it is desired to return to a prior iteration of the budget forecasting parameters.
	19	**FARDATA and FAR database tables:** The ***FARDATA*** directory (inside of the ***SECOND*** directory) contains the VISION files of the financial data for the system. ‣ A backup of ***FARDATA*** is created each night and is stored on CD/DVD/USB. ‣ ***FARDATA*** should only be restored if a restore of ***FARDATAQ*** will not correct the problem. ‣ ***FARDATA*** should not be restored if any interaction from payroll has occurred (posting payroll or processing an earnings history record gross data transfer). ‣ When both financial and payroll are affected, all of ***SECOND*** should be restored. *Always contact the Help Desk before restoring FARDATA only!* *Restoring only FARDATA may cause the financial data to become out of sync with payroll data, CPI data, personnel data, etc. resulting in more problems than it solves, so PROCEED WITH CAUTION.*

✓	Step	Action
		RESTORE WHAT AND WHEN (Continued)
	20	**FARDATAQ and FARQ database tables:** The *FARDATAQ* directory (inside of the *SECOND* directory) is a backup of *FARDATA* that is made just before updating budget files with vendor check information (**F5**). ▸ Restore from *FARDATAQ* if a problem occurs with posting to budget files (*Update Budget Files with Check Information* – F1, F4, F5, F5). ▸ Also restore from *FARDATAQ* if a problem occurs in financial data after posting but before the nightly backup is processed. ▸ *FARDATAQ* should not be restored if any interaction from payroll has occurred (posting payroll or processing an earnings history record gross data transfer). When both financial and payroll records are affected, all of *SECOND* should be restored.
	21	**Vendor MONITOR:** If an error occurs during extracting payables or printing vendor checks, the PCGenesis help desk has the ability to reset the vendor monitor switches. This is especially useful if a problem occurs during the printing of vendor checks, in which case the monitor can be reset to allow the vendor checks to be printed again. ▸ Call the PCGenesis help desk to reset the vendor monitor switches.

	DISASTER RECOVERY	
✓	**Step**	**Action**
	1	Disaster Recovery can and should cover a broad range of issues for any organization. The following is very narrow in focus to cover issues related to protect and recover a PCGenesis System. Discussion points include: ▸ Typical Current Configuration ▸ Reduce Risk ▸ Data and Program Backup ▸ Data Validation ▸ Data Recovery ▸ PCGenesis Server Recovery in the Event of a Server Hardware Failure ▸ Temporary Off-Site Operations

	2	**Typical current Configuration**
		▸ Windows Server 2022 64bit
		    • *C:* drive for operating system and programs
		    • *K:* drive for PCGenesis including all programs and data (shared for user access)
		▸ Average of 4 user *Windows 11 Pro Workstations*
		    • *C:* drive for operating system and programs
		    • *K:* drive mapped to PCGenesis Server
		    • Strongly recommend *Remote Desktop Connection* access for all users
		Responsibility: District Technology

	3	**Reduce Risk** ▸ Surge Protectors ▸ UPS ▸ RAID or Mirror disk configurations ▸ Anti-virus software has always been required for all PCGenesis servers and workstations **Responsibility:** District Technology

	Step	Action
DISASTER RECOVERY (Continued)		
	4	**Data and Program Backup** ‣ Use CD, DVD, USB or disk backup has always been required for all PCGenesis servers. ‣ This process requires a backup of the complete contents on the *K:*.** drive at least once weekly, and a full data backup of *K:\SECOND*.** <u>and</u> *K:\PCGSQLdb*.** on a daily basis. ‣ These backups are to be retained for at least four weeks and stored in a secure or off-site location. ‣ These backups provide recovery options for either an operational error or a physical disaster. ‣ **All backups must be <u>full</u> backups; therefore <u>incremental</u> backups are <u>not</u> an effective solution for PCGenesis backup/restore requirements**. ‣ When a restore of data files is required, it must be from a specific date because incremental backups are not reliable. **Responsibility:** District Technology and PCG Administrator
	5	**Data Validation** ‣ A data validation process should be run <u>each day</u> prior to any activity to ensure the integrity of data. ‣ There is now an automatic reorganization process (*K:\BACKUP\PCGREORG.BAT*) scheduled to run daily. **Responsibility:** District Technology and PCG Administrator
	6	**Data Recovery** ‣ Data corruption caused by hardware failures or operator errors may require restoring data from an appropriate backup copy. ‣ This may also require the operator to repeat one or more days of data entry. ‣ **Without the availability of complete and reliable system and data backups, recovery would be difficult, if not impossible.** **Responsibility:** District Technology and PCG Administrator

✓	Step	Action
		DISASTER RECOVERY (Continued)

✓	Step	Action
	7	**PCGenesis Server Recovery in the Event of a Server Hardware Failure** ▸ If the current Server / Workstation configuration cannot be restored within a day or two, other options could be made available on-site. ▸ Backup PCGenesis Server Options: - On-site Duplicate Production Server with access by user workstation (direct or remote desktop). - Off-site Duplicate Production Server with access by user workstation (direct or remote desktop). - Virtual Production Server with access by user workstation (direct or remote desktop). - A temporary single user server/workstation/laptop with a *K:* drive restored from a complete PCGenesis backup. **Responsibility:** District Technology and PCG Administrator
	8	**Temporary Off-Site Operations** ▸ If the current Server/Workstation configuration cannot be restored within a day or two, other options could be made available off-site. ▸ The full backup of *K:*.** could be loaded onto a PCGenesis-compatible hardware configuration at a RESA, if the RESA had such a configuration available. ▸ Backup System Options - Duplicate Production Server with access by user workstation (direct or remote desktop). - Virtual Production Server with access by user workstation (direct or remote desktop). - A temporary single user server/workstation/laptop with a *K:* drive restored from a complete PCGenesis backup. **Responsibility:** District Technology and PCG Administrator

Revision History

Date	Version	Description	Author
9/28/2023	2.1	23.03.00 – Add additional information for restoring PAYDATAQ/Database schema PAY/Q.	D. Ochala
03/22/2023	2.0	23.01.00 – Delete *SQL Server Databases and Tables for PCGenesis System* section	D. Ochala
12/22/2022	1.16	22.04.00 –Add Affordable Care Act (ACA) tables to *PCGenesisDB.mdf* database.	D. Ochala
09/30/2022	1.15	22.03.00 – Add Earnings History and CPI tables to *PCGenesisDB.mdf* database.	D. Ochala
06/02/2022	1.14	22.02.00 – Added payroll check master, garnishment, direct deposit, education, and leave tables to *PCGenesisDB.mdf* database.	D. Ochala
03/22/2022	1.13	22.01.00 – Add the payroll tables to *PCGenesisDB.mdf* database.	D. Ochala
12/28/2021	1.12	21.04.00 – Delete the *PCG_SANDBOX.mdf* database. Add the *PCG_LOG_DB.mdf* database.	D. Ochala
11/09/2021	1.11	21.03.00 – Added audit, control, and gatekeeper tables to *PCGenesisDB.mdf* database. Update for Windows Server 2022.	D. Ochala
06/14/2021	1.10	21.02.00 – Added journal, vendor check master, and wire transfer tables to *PCGenesisDB.mdf* database.	D. Ochala
03/25/2021	1.9	21.01.00 – Added claim and purchase order tables to *PCGenesisDB.mdf* database.	D. Ochala
09/25/2020	1.8	20.03.00 – Added *FAR.Chart_Of_Accounts, FAR.Invest, FAR.Vendor*, receipt and receivables tables to *PCGenesisDB.mdf* database.	D. Ochala
05/28/2020	1.7	20.02.00 – Added *FAR.Account, FAR.AccountR, FAR.AccountG* tables to *PCGenesisDB.mdf* database.	D. Ochala
04/22/2020	1.6	20.02.00 – Specified that reorganization task requires *SQL Server* service to be running.	D. Ochala
03/30/2020	1.5	20.01.00 – Added *FAR.Bank_File* and *FAR.NAME_xx* tables to *PCGenesisDB.mdf* database.	D. Ochala
08/08/2019	1.4	19.02.00 – Update with *SQL Server* database information.	D. Ochala
03/29/2019	1.3	19.01.00 – Update with *PCGenesisDB SQL Server Database* instructions.	D. Ochala
12/06/2018	1.2	18.03.01 – Update with *VerraDyne Print Manager* installation instructions.	D. Ochala
11/16/2016	1.1	16.03.00 – Update to 3 User Windows 7 Pro Workstations.	D. Ochala
08/21/2014	1.0	14.02.00 – New document.	D. Ochala