大型混合酸化物燃料加工施設保障措置機器
性能確認試験報告書
（令和 6 年度）

2025 年 3 月

日本原子力研究開発機構
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プロジェクト管理課

大型混合酸化物燃料加工施設保障措置機器性能確認試験報告書
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要旨

本報告は、原子力規制庁殿と国立研究開発法人日本原子力研究開発機構との間で令和 6 年 4 月に締結した受託業務契約「令和 6 年度軽水炉等改良技術確証試験等委託費（大型混合酸化物燃料加工施設保障措置機器性能確認試験）事業」に基づき実施した保障措置機器に対する性能確認試験の結果をとりまとめたものである。

本業務において性能確認試験の対象とした保障措置機器は、燃料集合体測定機器（AFAS）、バルク工程内 MOX 粉末・ペレット測定機器（AVIS）及び MOX 原料粉末貯蔵容器測定機器（IPCA2）である。

AFAS の性能確認試験のうち、「長期管理限界の妥当性確認」では、令和 6 年 4 月から令和 7 年 3 月までの期間において、連続的なバックグラウンド測定及び定期的な ^{252}Cf 中性子線源測定を実施し、AFAS が正常な状態を維持し、長期間安定して動作していたことを確認した。

「パルス間隔分布の評価」では、リストモジュールを使用して ^{252}Cf 中性子線源を測定し、得られたパルス間隔分布が正常であり、各アンプ、また、それぞれが接続されている ^{3}He 比例計数管及びケーブルが健全に保たれていることを確認した。

「プルトニウム 240 実効質量解析手法 Known M 法の適用性評価」では、モンテカルロシミュレーション（MCNPX）による評価を実施し、Known α 法及び Known M 法を使用して解析した燃料集合体中のプルトニウム 240 実効質量を比較することで、Known M 法の AFAS 測定への適用性を確認した。

AVIS の性能確認試験として実施した、「パルス間隔分布の評価」では、AFAS と同様に、得られたパルス間隔分布が正常であり、各アンプ、また、それぞれが接続されている ^{3}He 比例計数管及びケーブルが健全に保たれていることを確認した。

IPCA2 の性能確認試験のうち、「長期管理限界の妥当性確認」では、令和 6 年 4 月から令和 7 年 3 月までの期間において、連続的なバックグラウンド測定、定期的な線源測定及び分銅測定を実施し、各検出器及びロードセルが正常に長期間安定して動作していたことを確認した。

「ハードウェアの修理及び動作確認」では、IPCA2 に接続されている Power Supply Box の交換を行い、交換した機器が正常に動作することを確認した。

「測定パラメータの評価」では、測定パラメータの評価を行い、IPCA2 の動作設定に用いられる標準的な測定パラメータと比較することで、IPCA2 の性能が一定に保たれていることを確認した。

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略語集

略語	正式名	日本語名
AFAS	Advanced Fuel assembly Assay System	燃料集合体測定機器
AMSR	Advanced Multiplicity Shift Register	シフトレジスター
AVIS	Advanced Verification for Inventory Samples system	バルク工程内 MOX 粉末・ペレット測定機器
INCC	IAEA Neutron Coincidence Counting	測定ソフトウェア
IPCA2	Improved Plutonium Canister Assay system 2	MOX 原料粉末貯蔵容器測定機器
JAEA	Japan Atomic Energy Agency	国立研究開発法人日本原子力研究開発機構
J-MOX	JNFL's MOX fuel fabrication plant	大型混合酸化物燃料加工施設
JNFL	Japan Nuclear Fuel Limited	日本原燃株式会社
JSR-12	Model JSR-12 Neutron Coincidence Analyzer	シフトレジスター
JSR-15	JSR-15 Handheld Multiplicity Register	シフトレジスター
JTC	Joint Technical Committee	共同技術会合
LANL	Los Alamos National Laboratory	米国ロスアラモス国立研究所
MIC	Multi-Instrument Collect	測定ソフトウェア
UDL-1	Unattended Data Logger	シフトレジスター

1.　試験概要

国立研究開発法人日本原子力研究開発機構（以下、「JAEA」という）は、原子力規制庁殿と令和 6 年 4 月に締結した受託業務契約「令和 6 年度軽水炉等改良技術確証試験等委託費（大型混合酸化物燃料加工施設保障措置機器性能確認試験）事業」に基づき、大型混合酸化物燃料加工施設（以下、「J-MOX」という）に設置される保障措置機器である燃料集合体測定機器（以下、「AFAS」という）、バルク工程内 MOX 粉末・ペレット測定機器（以下、「AVIS」という）及び MOX 原料粉末貯蔵容器測定機器（以下、「IPCA2」という）の性能確認試験を実施した。

1.1　試験対象機器

（1）AFAS

AFAS は、軽水炉用 MOX 燃料集合体用の非破壊測定装置であり、PWR 用の AFAS-P（以下、「AFAS-PWR」または「AFAS-P」という）及び BWR 用の AFAS-B（以下、「AFAS-BWR」または「AFAS-B」という）　の 2 式から構成される。1 式の AFAS は、単位長さあたりの Pu 量測定用の中性子検出器 1 台（Collar 検出器）と燃料集合体の有効長（充填されている MOX ペレットのスタック長）測定用の中性子検出器 2 台（Top Fork 検出器及び Bottom Fork 検出器）により構成される。装置の外観写真を写真 1.1-1 に示す。

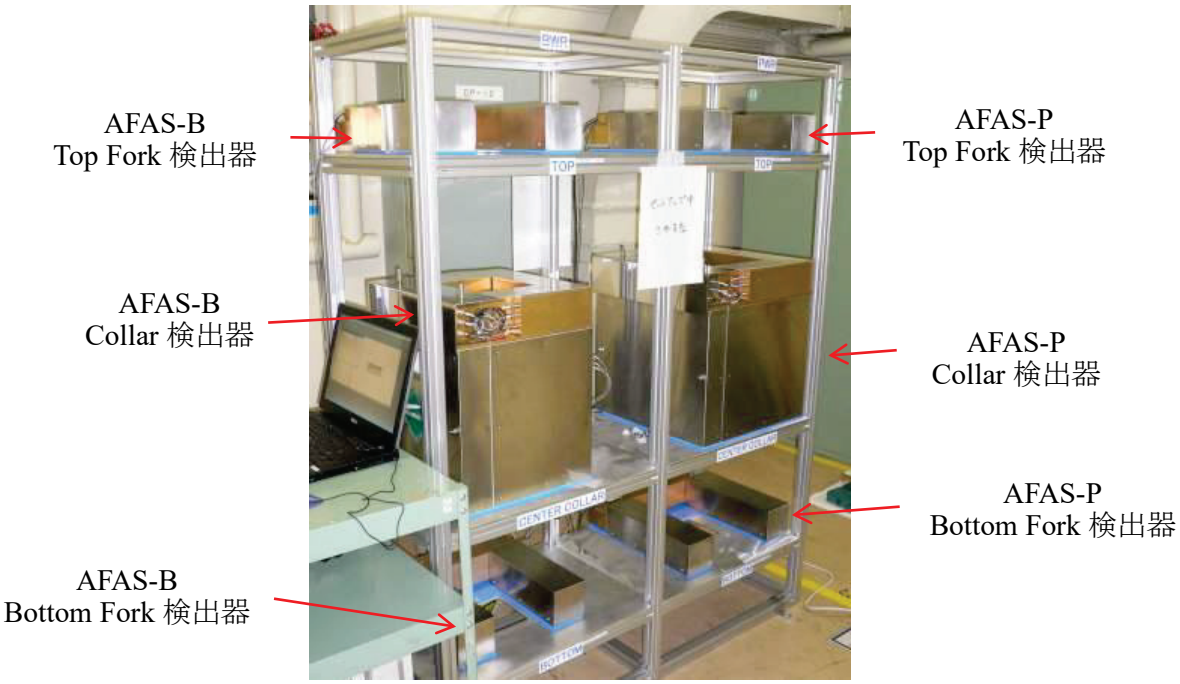

写真 1.1-1　AFAS の外観写真

（2）AVIS

AVIS は、工程内から収去した粉末及びペレット用の非破壊測定装置であり、Pu 量測定用の中性子検出器及び Pu 同位体組成比測定用の高純度ゲルマニウム（HPGe）半導体検出器（ガンマ線検出器）により構成される。装置の外観写真を写真 1.1-2 に示す。

写真 1.1-2　AVIS の外観写真

（3）IPCA2

IPCA2 は、MOX 原料粉末用の非破壊測定装置であり、Pu 量測定用の中性子検出器、Pu 同位体組成比測定用の電気冷却式高純度ゲルマニウム（HPGe）半導体検出器（ガンマ線検出器）3 台及びロードセル（荷重変換器）により構成される。装置の外観写真を写真 1.1-3 に示す。

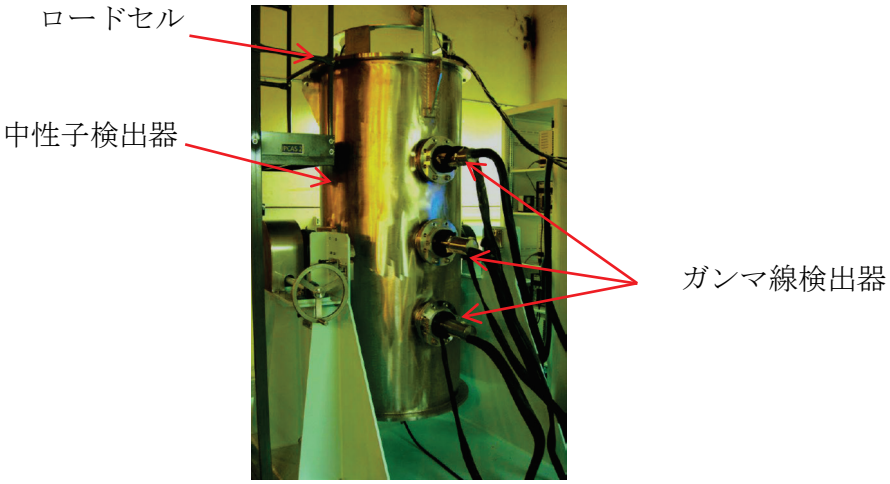

写真 1.1-3　IPCA2 の外観写真

（公益財団法人 核物質管理センター “H25 年度 大型 MOX 燃料加工施設保障措置試験” 報告書より引用）

1.2　試験項目

（1）AFAS の性能確認試験

AFAS の性能確認試験項目を表 1.2-1 に示す。各試験の詳細については 2.項に示す。

表 1.2-1　AFAS 性能確認試験項目

機器名	試験項目	参照項
AFAS	長期管理限界の妥当性確認	2.1
	パルス間隔分布の評価	2.2
	プルトニウム 240 実効質量解析手法 Known M 法の適用性評価	2.3

（2）AVIS の性能確認試験

AVIS の性能確認試験項目を表 1.2-2 に示す。各試験の詳細な内容については 3.項に示す。

表 1.2-2　AVIS 性能確認試験項目

機器名	試験項目	参照項
AVIS	パルス間隔分布の評価	3.1

（3）IPCA2 の性能確認試験

IPCA2 の性能確認試験項目を表 1.2-3 に示す。各試験の詳細な内容については 4.項に示す。

表 1.2-3　IPCA2 性能確認試験項目

機器名	試験項目	参照項
IPCA2	長期管理限界の妥当性確認	4.1
	ハードウェアの修理及び動作確認	4.2
	測定パラメータの評価	4.3

1.3　試験スケジュール

AFAS、AVIS 及び IPCA2 の性能確認試験スケジュールを表 1.3-1 に示す。

表 1.3-1　性能確認試験スケジュール

内容	令和 6 年度											
	4	5	6	7	8	9	10	11	12	1	2	3
性能確認試験												
報告書作成												
試験に係る会合等（開催場所）		JTC(*1)会合（JNFL(*2)）▲					JTC 会合（リモート会議）▲			LANL(*3)との技術会合（リモート会議）▲		

*1: JTC（共同技術会合（Joint Technical Committee））

*2: JNFL（日本原燃株式会社（Japan Nuclear Fuel Limited））

*3: LANL（米国ロスアラモス国立研究所（Los Alamos National Laboratory））

1.4　試験実施場所

（1）AFAS 性能確認試験

・プルトニウム燃料第二開発室 試験検査室（C）（C-137）

（2）AVIS 性能確認試験

・プルトニウム燃料第一開発室 燃料要素組立室（R-120）

（3）IPCA2 性能確認試験

・米国ロスアラモス国立研究所

1.5　測定パラメータ

（1）AFAS 用測定パラメータ

本年度の試験に使用した AFAS-B 及び AFAS-P の各検出器の測定パラメータを表 1.5-1 及び表 1.5-2 に示す。

表 1.5-1　AFAS-B の中性子検出器の測定パラメータ

項目	Collar	Top Fork	Bottom Fork
シフトレジスターの種類	JSR-12, JSR-15, UDL-1	JSR-12, JSR-15, UDL-1	JSR-12, JSR-15, UDL-1
プレディレイ (μs)	1.50	1.50	1.50
ゲート幅 (μs)	64.00	64.00	64.00
印加電圧 (V)	1,720	1,720	1,720
ダイアウェイタイム (μs)	50.0000	50.0000	50.0000
中性子検出効率(^{252}Cf)	0.1970	0.0080	0.0060
Multiplicity デッドタイム補正係数	160.0000×10^{-9}	0.0000	0.0000
デッドタイム補正係数 *a*	0.6419×10^{-6}	0.0000	0.0000
デッドタイム補正係数 *b*	0.1030×10^{-12}	0.0000	0.0000

表 1.5-2　AFAS-P の中性子検出器の測定パラメータ

項目	Collar	Top Fork	Bottom Fork
シフトレジスターの種類	JSR-12, JSR-15, UDL-1	JSR-12, JSR-15, UDL-1	JSR-12, JSR-15, UDL-1
プレディレイ (μs)	1.50	1.50	1.50
ゲート幅 (μs)	64.00	64.00	64.00
印加電圧 (V)	1,720	1,720	1,720
ダイアウェイタイム (μs)	50.0000	50.0000	50.0000
中性子検出効率(^{252}Cf)	0.1620	0.0126	0.0127
Multiplicity デッドタイム補正係数	86.5000×10^{-9}	0.0000	0.0000
デッドタイム補正係数 *a*	0.3458×10^{-6}	0.0000	0.0000
デッドタイム補正係数 *b*	0.02989×10^{-12}	0.0000	0.0000

（2）AVIS 用測定パラメータ

本年度の試験に使用した AVIS の中性子検出器の測定パラメータを表 1.5-3 に示す。

表 1.5-3　AVIS の中性子検出器の測定パラメータ

項目	パラメータ
シフトレジスターの種類	JSR-15
プリディレイ(μs)	1.50
ゲート幅(μs)	64.00
印加電圧(V)	1,740
ダイアウェイタイム(μs)	30.00
中性子検出効率	0.6750
Multiplicity デッドタイム補正係数	72.6000×10^{-9}
デッドタイム補正係数 *a*	0.2904×10^{-6}
デッドタイム補正係数 *b*	0.0211×10^{-12}
ダブルゲートフラクション	0.7930
トリプルゲートフラクション	0.6225
スロープ b	3.240449×10^{2}
Alpha weight	1.000
ρ_0	4.707231×10^{-1}
K	2.166

（3）IPCA2 用測定パラメータ

本年度の試験に使用した IPCA2 の中性子検出器の測定パラメータについては、LANL 報告書 “Technical Specification for the Improved Plutonium Canister Assay System (IPCA2)” (参考文献 1)を参照のこと。

1.6　試験に使用した ^{252}Cf 中性子線源

本年度の試験に使用した ^{252}Cf 中性子線源の線源番号及び中性子放出率を表 1.6-1 に示す。表中の中性子放出率は、各線源の線源証明書に記載されている値を、評価日に合わせて崩壊計算することにより求めた値である。なお、LANL において使用された中性子線源については、LANL 報告書“Annual IPCA2 Performance Report for JFY24（添付資料）を参照のこと。

表 1.6-1　試験に使用した ^{252}Cf 中性子線源

線源番号	中性子放出率(n/s)	評価日
H4-694	1.3×10^{4}	2024/4/1
T1-349	1.6×10^{5}	

2.　AFAS の性能確認試験

2.1　長期管理限界の妥当性確認

2.1.1　目的

J-MOX において査察官非立会測定システムとして使用される AFAS の長期安定性を確認する。また、AFAS の各検出器から得られる計数率の長期管理限界(*4)の妥当性確認（長期管理限界内に収まっているか否かの確認）を定期的に行う。

*4: 長期管理限界：長期間の使用を考慮した管理限界（統計的に有効な一定数の測定値をグラフ化した時の、測定値がかなり高い確率で存在する範囲の境界）

2.1.2　方法

連続的なバックグラウンド測定を実施し、AFAS の各検出器の長期安定性を評価するとともに、本測定期間における測定環境の温度及び湿度を測定し、計数率との相関の有無を確認する。

また、定期的な ^{252}Cf 中性子線源測定を実施し、長期にわたり取得した各計数率及び誤差より、各検出器の長期管理限界を評価するとともに、測定環境の温度及び湿度と計数率及びその期待値の相対差（以下、「%Difference」という）の相関の有無を確認する。なお、本測定では、1.6 項の表 1.6-1 に示した ^{252}Cf 中性子線源（H4-694）を使用する。

本確認は、AFAS-B 及び AFAS-P の各検出器について行い、Multi-Instrument Collect（以下、「MIC」という）ソフトウェア、IAEA Neutron Coincidence Counting（以下、「INCC」という）ソフトウェア及び JAEA 所掌の Model JSR-12 Neutron Coincidence Analyzer（以下、「JSR-12」という）を使用して測定及び評価を行う。また、AFAS-P の各検出器の測定については、IAEA から提供された Unattended Data Logger（以下、「UDL-1」という）を使用した長期管理限界の妥当性確認を合わせて実施する。JSR-12 及び UDL-1 を使用した場合の機器接続図を図 2.1.2-1 に示す。

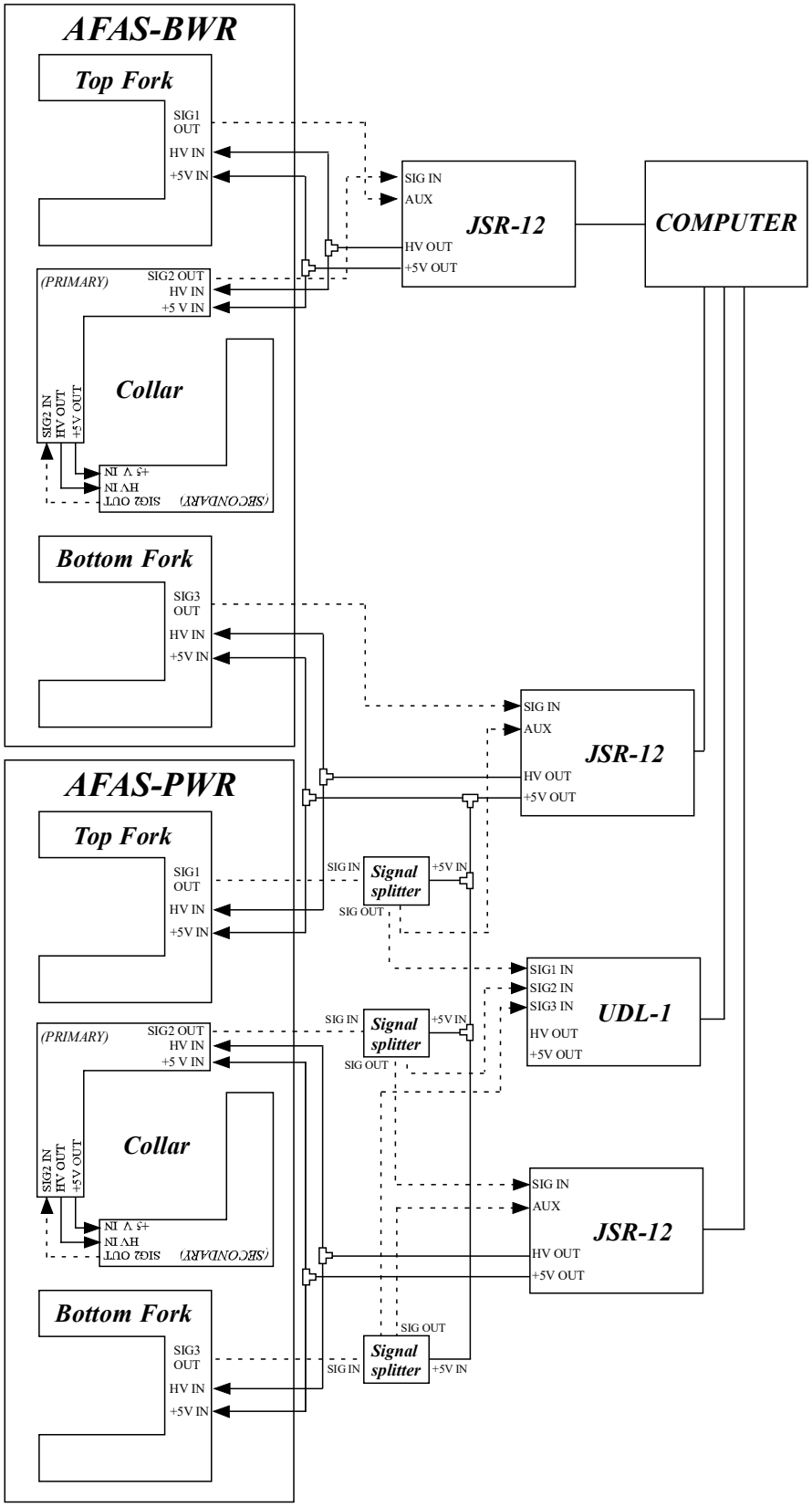

図 2.1.2-1　AFAS 機器接続図

詳細な試験手順を以下に示す。

(1) バックグラウンド測定

① AFAS の各検出器及び温湿度計を試験用架台に設置する。

② MIC ソフトウェア及び UDL-1 制御用アプリケーションを使用して、連続的なバックグラウンド測定を実施し、INCC ソフトウェアを使用して各計数率を評価する。測定条件を以下に示す。また、測定期間における温湿度の測定も同時に実施する。

・測定時間：60 秒×∞回

・測定期間：2024 年 4 月～2025 年 3 月(*5)

・取得する計数率：Collar 検出器：シングル値(*6)、ダブル値(*7)

Fork 検出器：シングル値

③ ②にて取得した各計数率における異常値の有無を確認し、各検出器の長期安定性を評価する。また、測定環境の温湿度と計数率の相関の有無を評価する。

*5: AFAS の他の試験期間及び維持管理時、また核燃料物質を近傍で取り扱う査察期間等及び電源が使用不可となる施設保守期間等を除く。

*6: 検出器で検出された全ての中性子の単位時間あたりの数（cps）

*7: 検出器で検出された核分裂事象に起因する中性子の単位時間あたりの数（cps）

(2) ^{252}Cf 中性子線源測定

① AFAS の各検出器及び温湿度計を試験用架台に設置する。

② 線源固定治具を使用して、^{252}Cf 中性子線源を任意の検出器にセットする。

③ MIC ソフトウェア及び UDL-1 制御用アプリケーションを使用して、^{252}Cf 中性子線源測定を月 1 回の頻度で実施し、INCC ソフトウェアを使用して各計数率を評価する。測定条件を以下に示す。また、測定時における温湿度の測定も同時に実施する。

・測定時間：600 秒

・取得する計数率：Collar 検出器：ダブル値

Fork 検出器：シングル値

④ 全ての検出器について、②～③を実施する。

⑤ ②～④により得られた各計数率及び誤差より、各検出器の長期管理限界を評価する。また、測定環境の温湿度と各計数率の%Difference の相関の有無を評価する。

2.1.3　結果

（1）バックグラウンド測定

連続的なバックグラウンド測定の結果及びバックグラウンド計数率と測定環境の温度及び湿度の相関の評価結果を検出器毎に次頁以降の①～⑥に示す。評価結果については、測定期間中の環境変化（AFAS 検出器近傍の設備の移動、隣接する部屋内の放射線源の増減）により、バックグラウンドの計数率が変動した期間ごとに分けて示した。バックグラウンド測定結果を示すグラフ中の赤色の実線は各計数率の平均値を示し、破線は平均値の±3σ（3σ は標準偏差を 3 倍した値）を示す。また、Collar 検出器及び Fork 検出器の各期間におけるバックグラウンドのシングル値の平均値を表 2.1.3-1 及び表 2.1.3-2 に示す。なお、2024 年 5 月に UDL-1 制御用アプリケーションを動作させているコンピュータの調整作業を実施したため、作業終了までの 1 か月間については当該計数装置によるバックグラウンド測定は停止した。

AFAS-B の Collar 検出器におけるシングル値は図 2.1.3-1～5 に示すとおりであり、ほぼ全ての計数率は平均値の±3σ の範囲内に収まった。ダブル値は図 2.1.3-6～10 に示すとおりであり、平均値は全期間において約 0.005cps であった。

AFAS-P の Collar 検出器におけるシングル値は図 2.1.3-31～35 に示すとおりであり、ほぼ全ての計数率は平均値の±3σ の範囲内に収まった。ダブル値は図 2.1.3-36～40 に示すとおりであり、平均値は全期間において約 0.190cps であった（異常値を含む）。なお、シングル値及びダブル値において、全期間に単発的な高い計数率（シングル値：約 19cps～37cps、ダブル値：約 43cps～3766cps）がシングル値及びダブル値それぞれに 45 回程度確認された（図 2.1.3-31～40 に示す）。

Fork 検出器における各検出器のシングル値の平均値は表 2.1.3-2 に示すとおりであり、ほぼ全ての計数率は平均値の±3σ の範囲内に収まった。なお、AFAS-B の Bottom Fork 検出器において、2024 年 6 月から 8 月にかけてシングル値が徐々に増加する事象が確認された（図 2.1.3-91 に示す）。

測定期間中、測定環境の温度は約 16℃～28℃、湿度は約 38%～77%の範囲で変動した。図 2.1.3-11～30、図 2.1.3-41～60、図 2.1.3-66～75、図 2.1.3-81～90、図 2.1.3-97～100、図 2.1.3-102～105 及び図 2.1.3-111～120 に示す期間では、各検出器の計数率と温度及び湿度に相関関係はみられなかったが、図 2.1.3-96、図 2.1.3-101 及び図 2.1.3-102 に示す期間では、AFAS-B の Bottom Fork 検出器のシングル値と温度及び湿度に相関係数 0.5～0.6 程度の正の相関がみられた。

表 2.1.3-1　Collar 検出器の各期間におけるバックグラウンドのシングル値の平均値

検出器	バックグラウンドのシングル値の平均値（cps）				
	2024/4/5 ～ 8/5	8/24 ～ 10/9	10/11 ～ 10/21	10/24 ～ 12/17	12/17 ～ 2025/3/11
AFAS-B Collar	9.971	9.298	9.680	8.554	6.730
AFAS-P Collar	14.846	13.700	14.298	12.042	9.462

表 2.1.3-2　Fork 検出器の各期間におけるバックグラウンドのシングル値の平均値

検出器	バックグラウンドのシングル値の平均値（cps）				
	2024/4/5 ～ 8/5	8/24 ～ 10/9	10/11 ～ 10/21	10/24 ～ 12/17	12/17 ～ 2025/3/11
AFAS-B Top Fork	1.331	1.243	1.293	1.175	0.884
AFAS-P Top Fork	2.220	2.092	2.188	1.878	1.426
AFAS-B Bottom Fork	1.268	1.113	1.021	0.913	0.869
AFAS-P Bottom Fork	1.650	1.510	1.585	1.343	1.056

① AFAS-B Collar 検出器

・バックグラウンドのシングル値：図 2.1.3-1～5

・バックグラウンドのダブル値：図 2.1.3-6～10

・シングル値と温度の相関：図 2.1.3-11～15

・ダブル値と温度の相関：図 2.1.3-16～20

・シングル値と湿度の相関：図 2.1.3-21～25

・ダブル値と湿度の相関：図 2.1.3-26～30

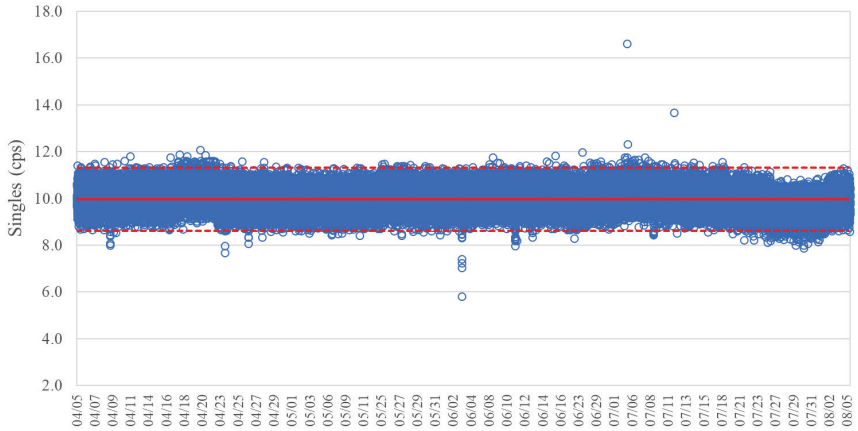

図 2.1.3-1　バックグラウンドのシングル値（2024/4/5～2024/8/5）
（AFAS-B Collar 検出器）

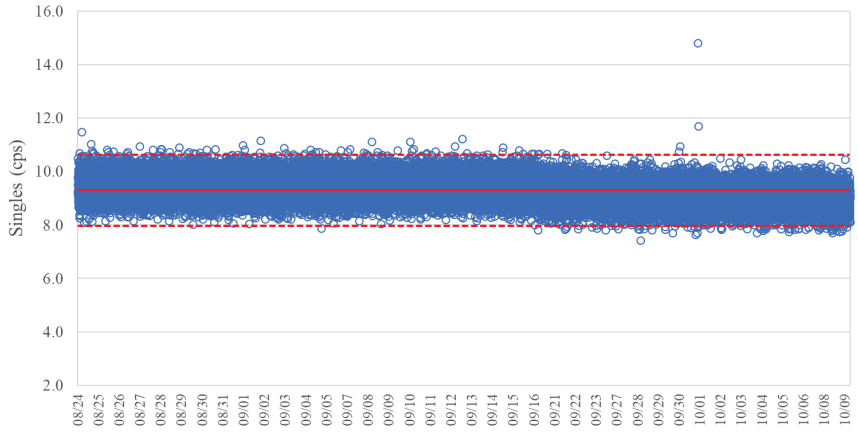

図 2.1.3-2　バックグラウンドのシングル値（2024/8/24～20２0/9）
（AFAS-B Collar 検出器）

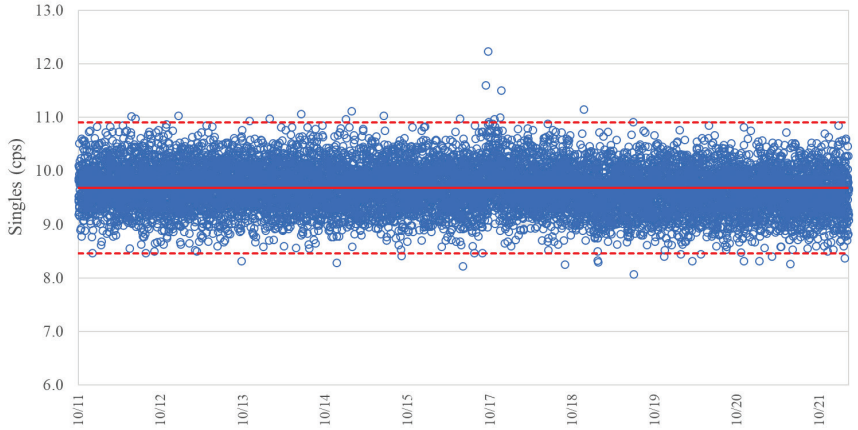

図 2.1.3-3　バックグラウンドのシングル値（2024/10/11～2024/10/21）
（AFAS-B Collar 検出器）

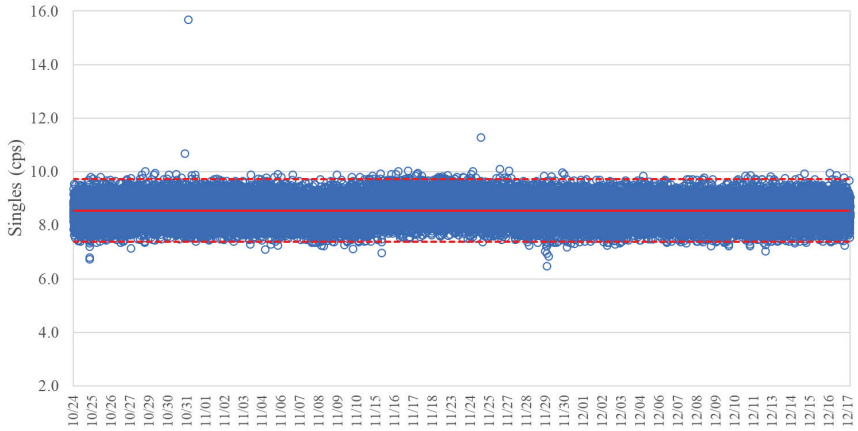

図 2.1.3-4　バックグラウンドのシングル値（2024/10/24～2024/12/17）
（AFAS-B Collar 検出器）

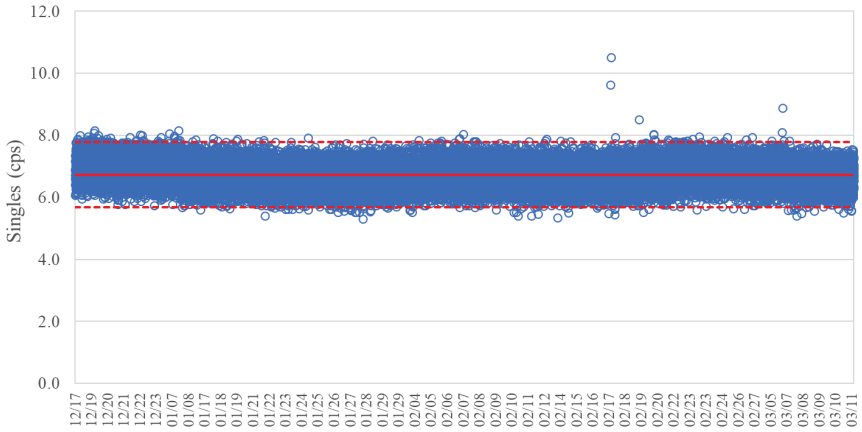

図 2.1.3-5　バックグラウンドのシングル値（2024/12/17～2025/3/11）
（AFAS-B Collar 検出器）

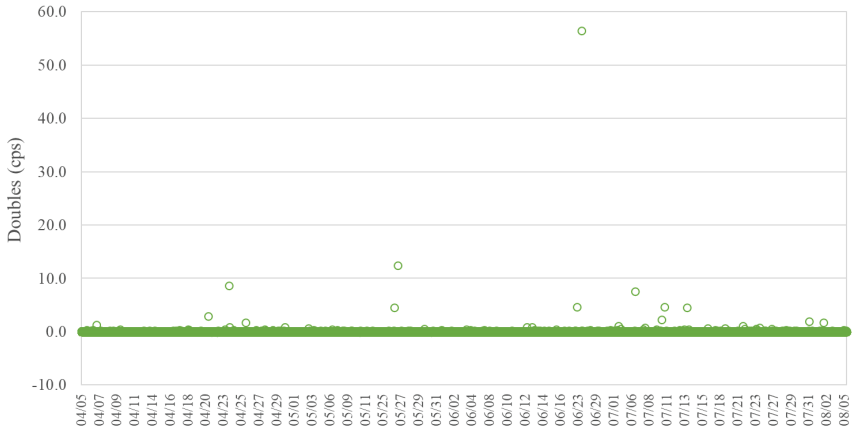

図 2.1.3-6　バックグラウンドのダブル値（2024/4/5～2024/8/5）
（AFAS-B Collar 検出器）

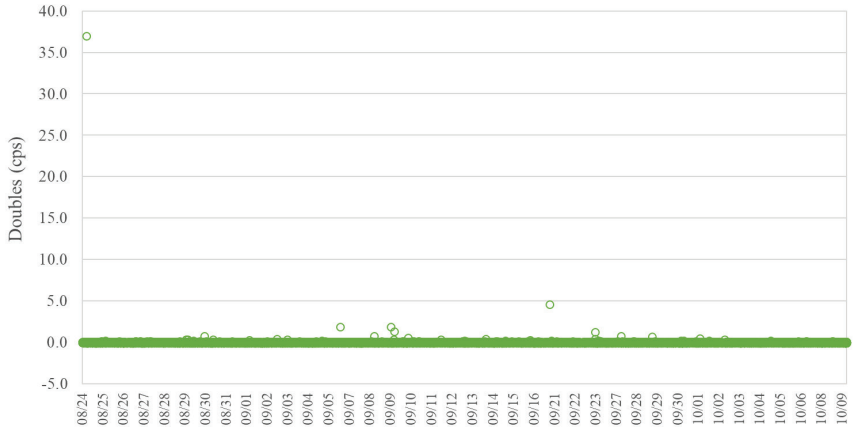

図 2.1.3-7　バックグラウンドのダブル値（2024/8/24～2024/10/9）
（AFAS-B Collar 検出器）

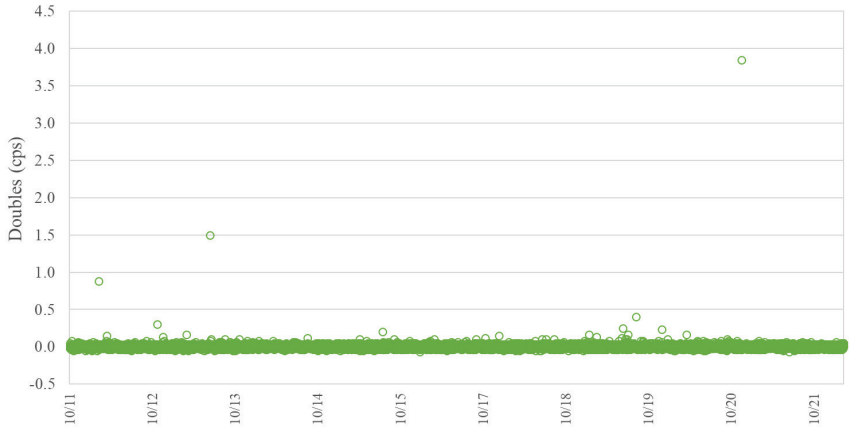

図 2.1.3-8　バックグラウンドのダブル値（2024/10/11～2024/10/21）
（AFAS-B Collar 検出器）

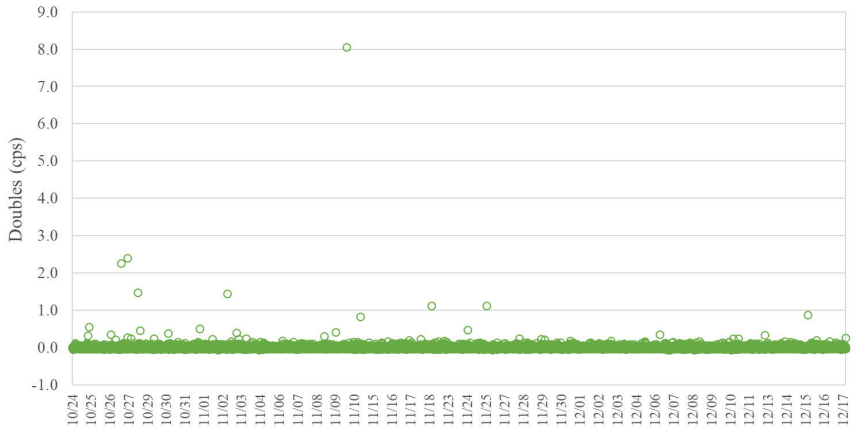

図 2.1.3-9　バックグラウンドのダブル値（2024/10/24～2024/12/17）
（AFAS-B Collar 検出器）

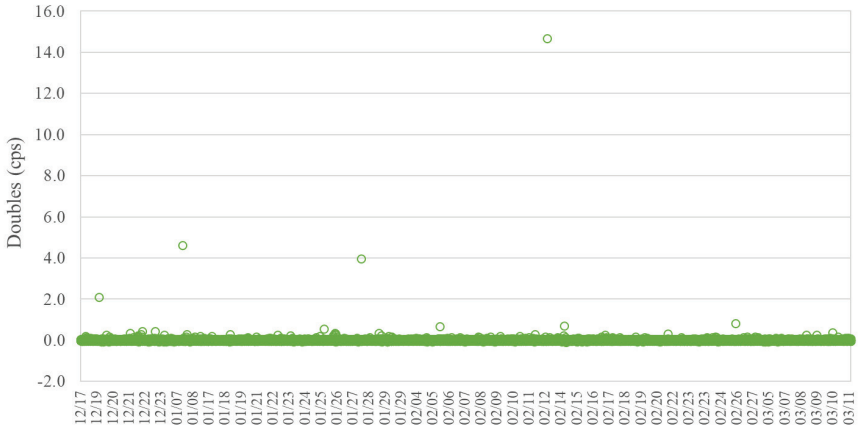

図 2.1.3-10　バックグラウンドのダブル値（2024/12/17～2025/3/11）
（AFAS-B Collar 検出器）

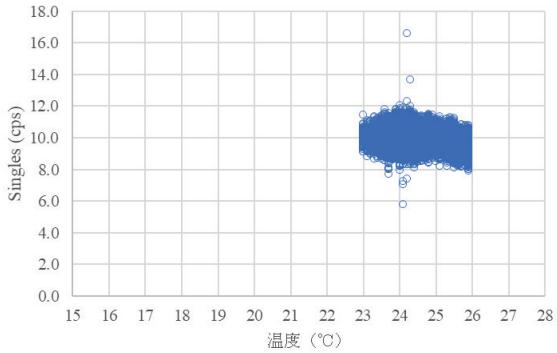

図 2.1.3-11　シングル値と温度の相関（2024/4/5～2024/8/5）
（AFAS-B Collar 検出器）

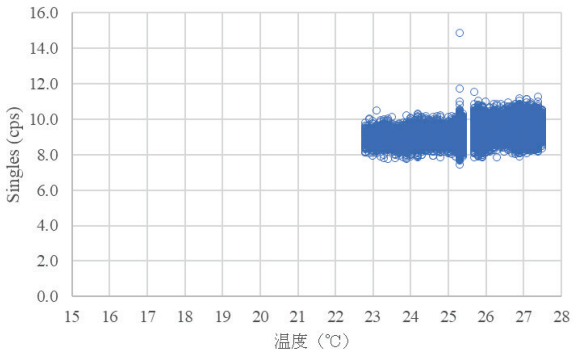

図 2.1.3-12　シングル値と温度の相関（2024/8/24～2024/10/9）
（AFAS-B Collar 検出器）

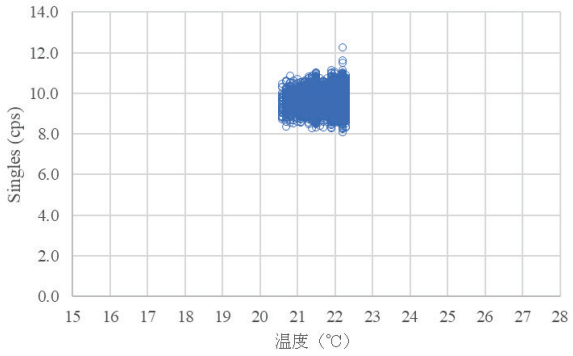

図 2.1.3-13　シングル値と温度の相関（2024/10/11～2024/10/21）
（AFAS-B Collar 検出器）

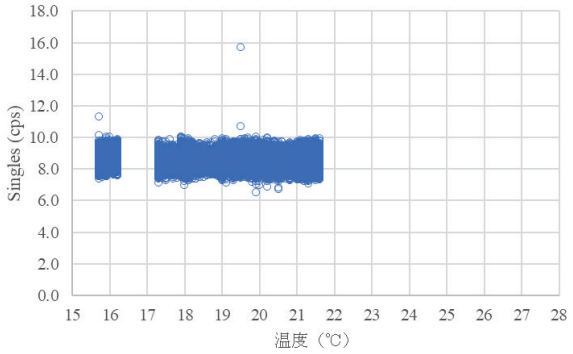

図 2.1.3-14　シングル値と温度の相関（2024/10/24～2024/12/17）
（AFAS-B Collar 検出器）

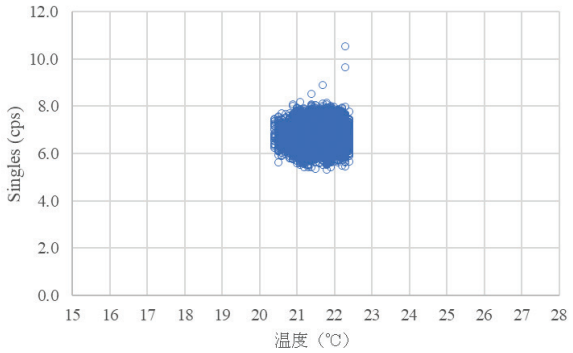

図 2.1.3-15　シングル値と温度の相関（2024/12/17～2025/3/11）
（AFAS-B Collar 検出器）

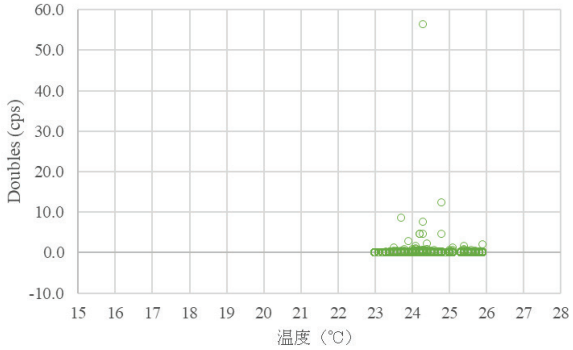

図 2.1.3-16　ダブル値と温度の相関（2024/4/5～2024/8/5）
（AFAS-B Collar 検出器）

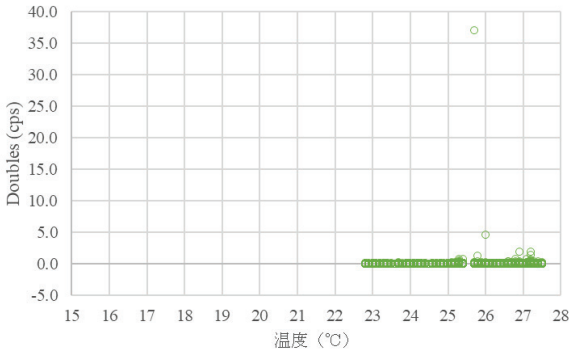

図 2.1.3-17　ダブル値と温度の相関（2024/8/24～2024/10/9）
（AFAS-B Collar 検出器）

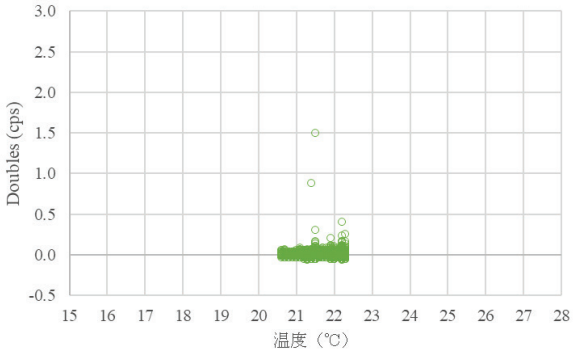

図 2.1.3-18　ダブル値と温度の相関（2024/10/11～2024/10/21）
（AFAS-B Collar 検出器）

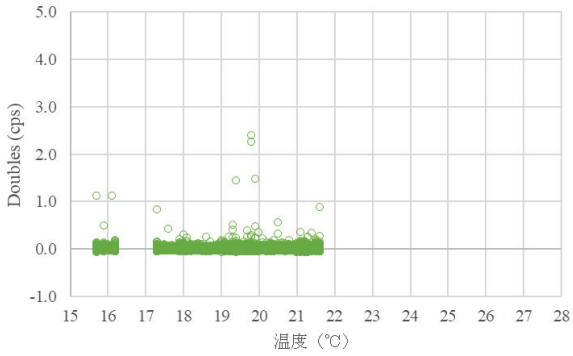

図 2.1.3-19　ダブル値と温度の相関（2024/10/24～2024/12/17）
（AFAS-B Collar 検出器）

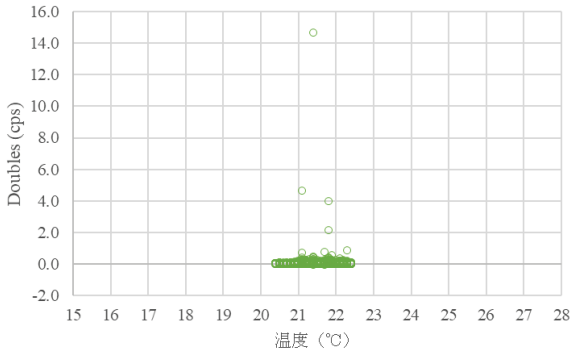

図 2.1.3-20　ダブル値と温度の相関（2024/12/17～2025/3/11）
（AFAS-B Collar 検出器）

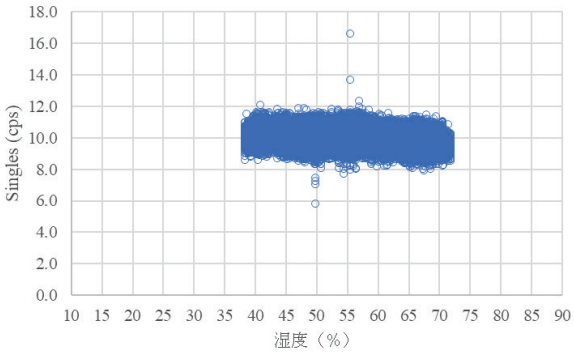

図 2.1.3-21　シングル値と湿度の相関（2024/4/5～2024/8/5）
（AFAS-B Collar 検出器）

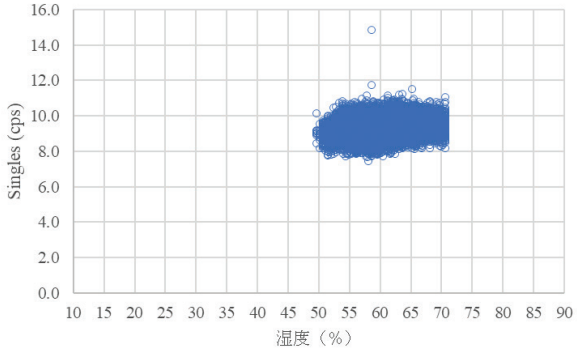

図 2.1.3-22　シングル値と湿度の相関（2024/8/24～2024/10/9）
（AFAS-B Collar 検出器）

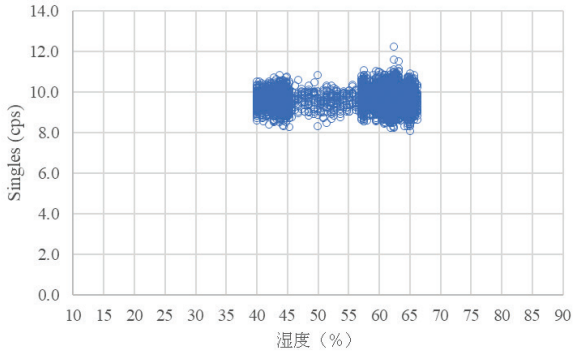

図 2.1.3-23　シングル値と湿度の相関（2024/10/11～2024/10/21）
（AFAS-B Collar 検出器）

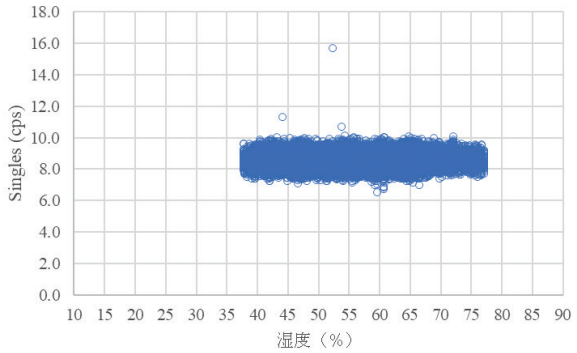

図 2.1.3-24　シングル値と湿度の相関（2024/10/24～2024/12/17）
（AFAS-B Collar 検出器）

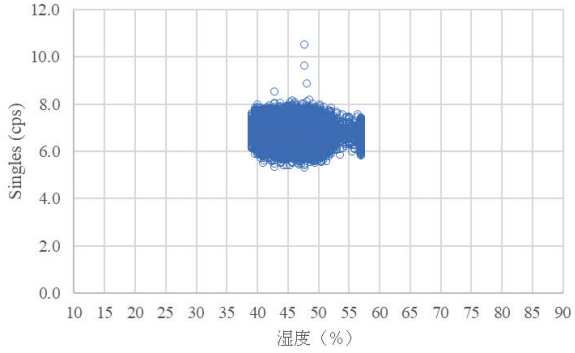

図 2.1.3-25　シングル値と湿度の相関（2024/12/17～2025/3/11）
（AFAS-B Collar 検出器）

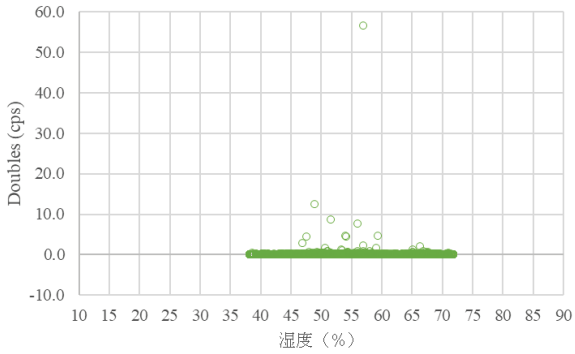

図 2.1.3-26　ダブル値と湿度の相関（2024/4/5～2024/8/5）
（AFAS-B Collar 検出器）

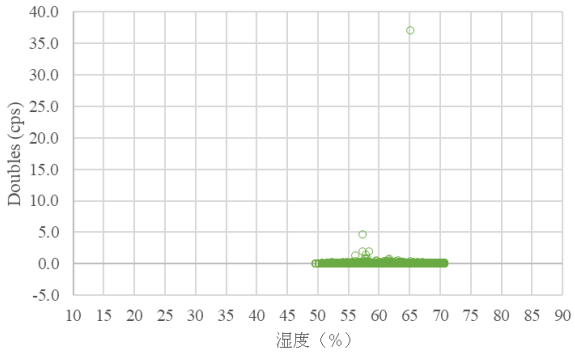

図 2.1.3-27　ダブル値と湿度の相関（2024/8/24～2024/10/9）
（AFAS-B Collar 検出器）

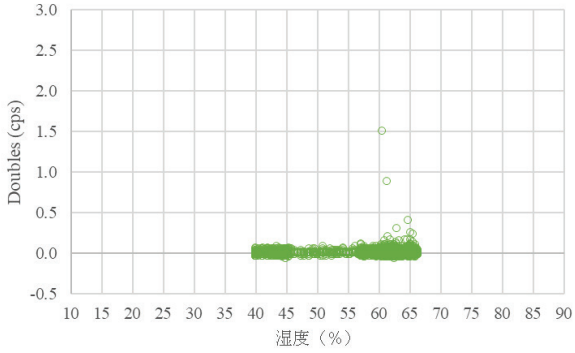

図 2.1.3-28　ダブル値と湿度の相関（2024/10/11～2024/10/21）
（AFAS-B Collar 検出器）

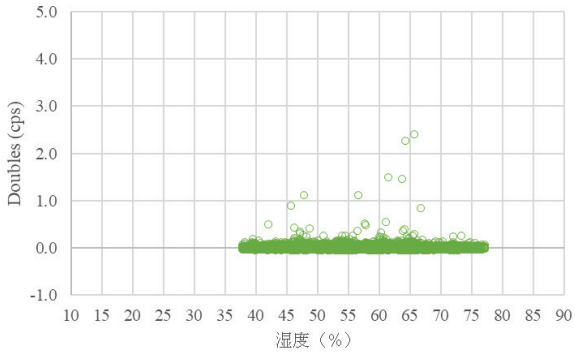

図 2.1.3-29　ダブル値と湿度の相関（2024/10/24～2024/12/17）
（AFAS-B Collar 検出器）

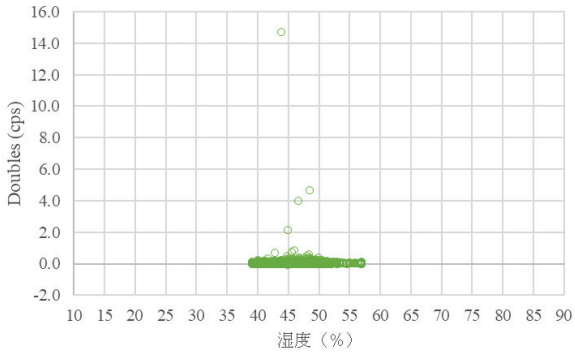

図 2.1.3-30　ダブル値と湿度の相関（2024/12/17～2025/3/11）
（AFAS-B Collar 検出器）

② AFAS-P Collar 検出器

・バックグラウンドのシングル値：図 2.1.3-31～35

・バックグラウンドのダブル値：図 2.1.3-36～40

・シングル値と温度の相関：図 2.1.3-41～45

・ダブル値と温度の相関：図 2.1.3-46～50

・シングル値と湿度の相関：図 2.1.3-51～55

・ダブル値と湿度の相関：図 2.1.3-56～60

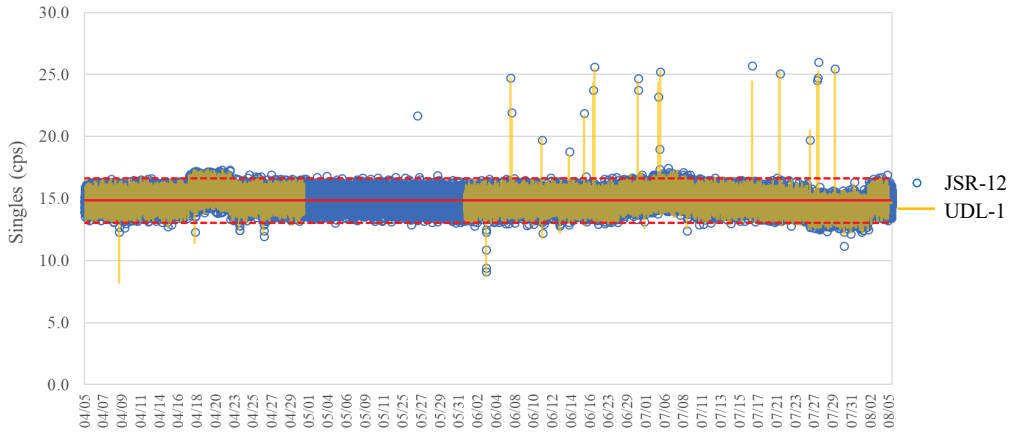

図 2.1.3-31　バックグラウンドのシングル値（2024/4/5～2024/8/5）
（AFAS-P Collar 検出器）

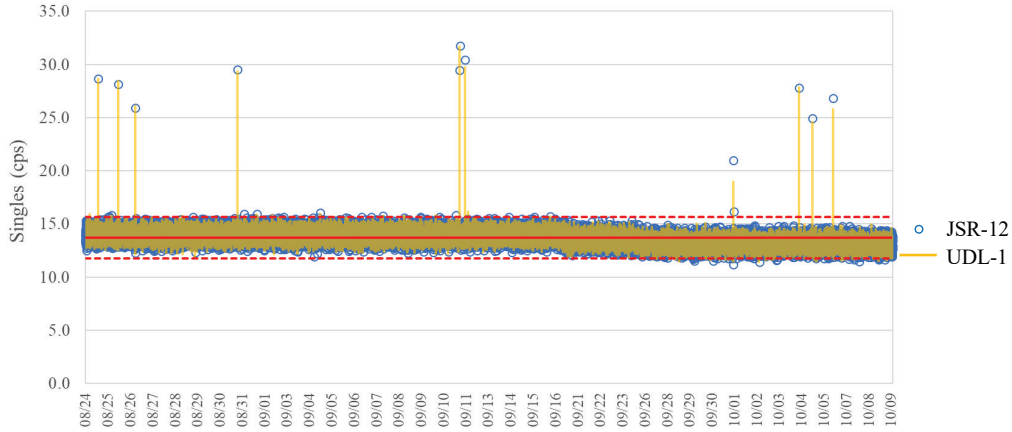

図 2.1.3-32　バックグラウンドのシングル値（2024/8/24～2024/10/9）
（AFAS-P Collar 検出器）

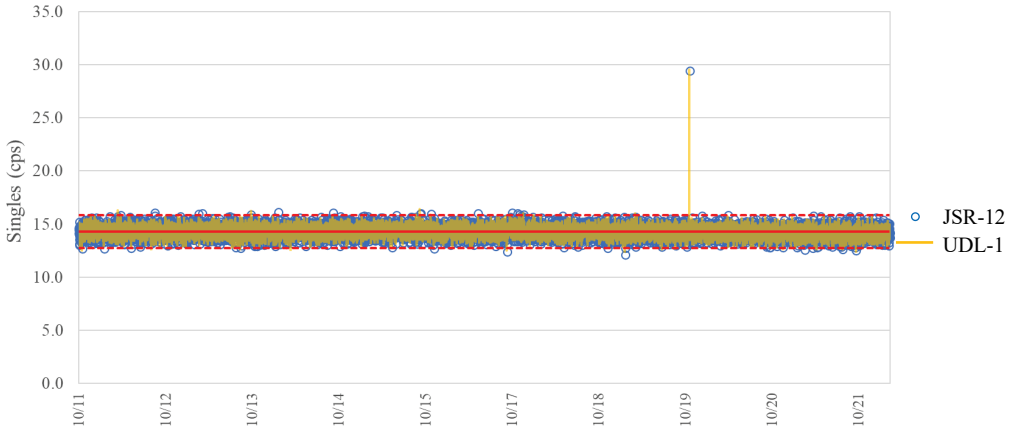

図 2.1.3-33　バックグラウンドのシングル値（2024/10/11～2024/10/21）
（AFAS-P Collar 検出器）

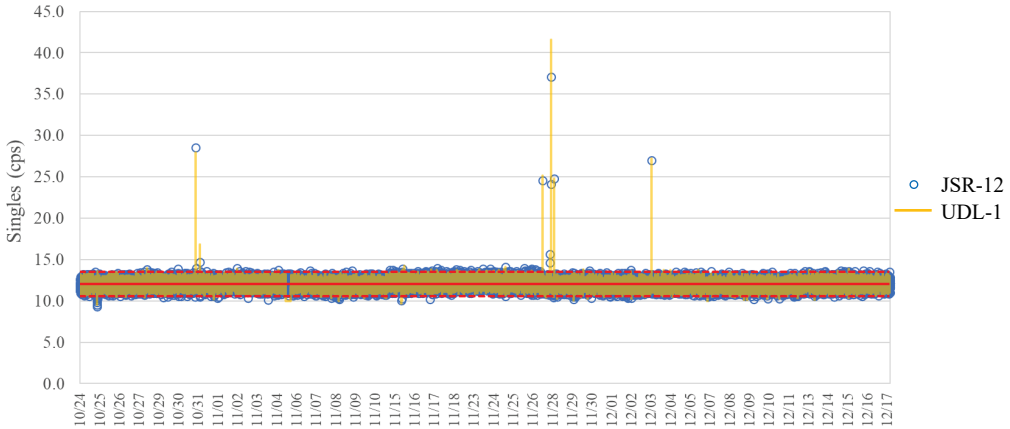

図 2.1.3-34　バックグラウンドのシングル値（2024/10/24～2024/12/17）
（AFAS-P Collar 検出器）

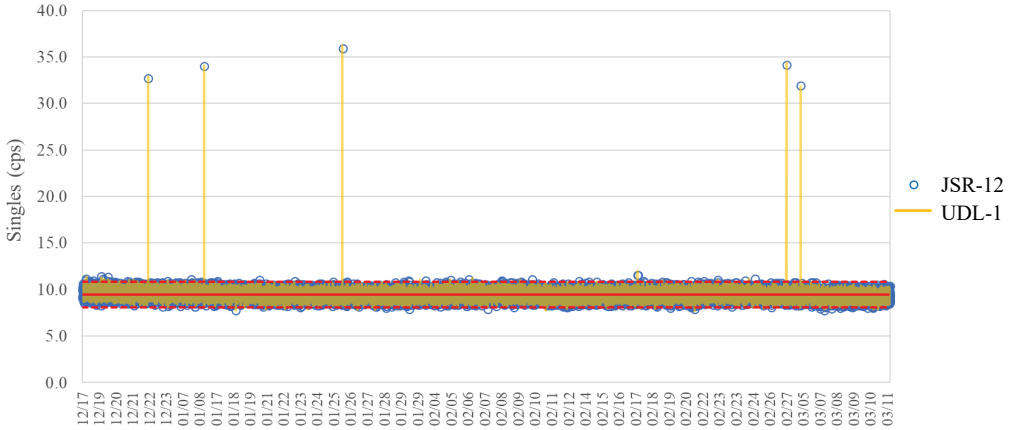

図 2.1.3-35　バックグラウンドのシングル値（2024/12/17～2025/3/11）
（AFAS-P Collar 検出器）

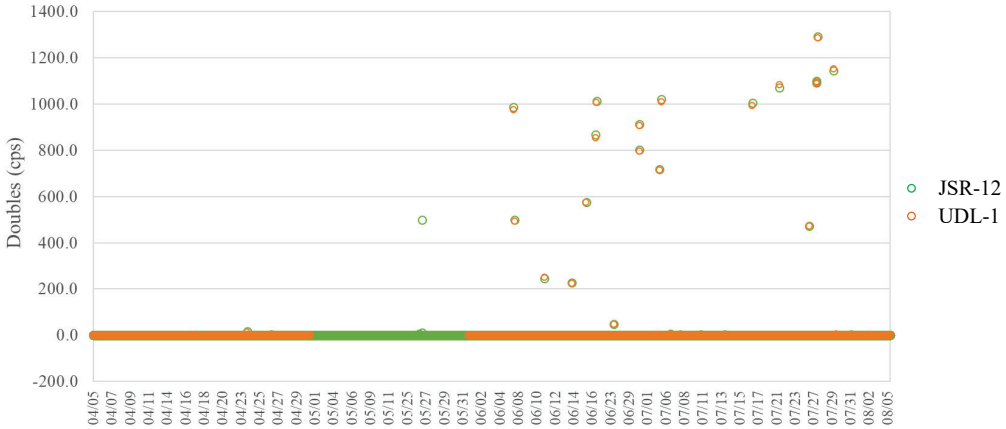

図 2.1.3-36　バックグラウンドのダブル値（2024/4/5～2024/8/5）
（AFAS-P Collar 検出器）

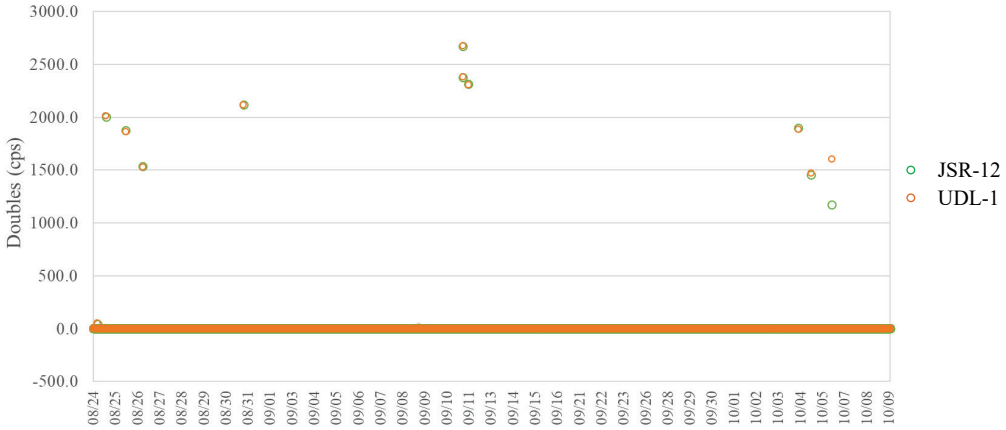

図 2.1.3-37　バックグラウンドのダブル値（2024/8/24～2024/10/9）
（AFAS-P Collar 検出器）

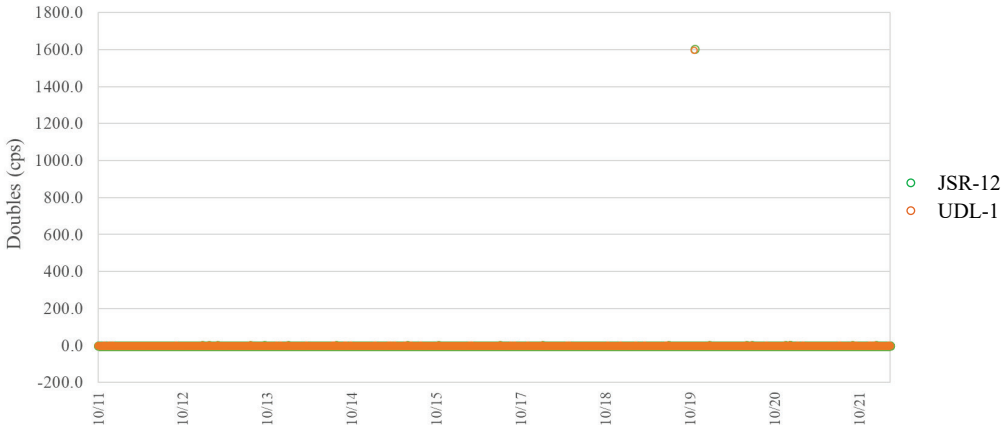

図 2.1.3-38　バックグラウンドのダブル値（2024/10/11～2024/10/21）
（AFAS-P Collar 検出器）

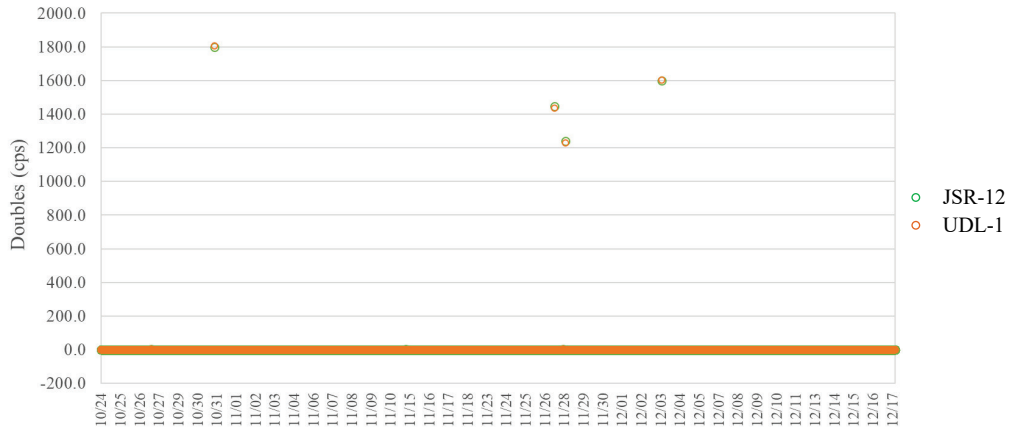

図 2.1.3-39　バックグラウンドのダブル値（2024/10/24～2024/12/17）
（AFAS-P Collar 検出器）

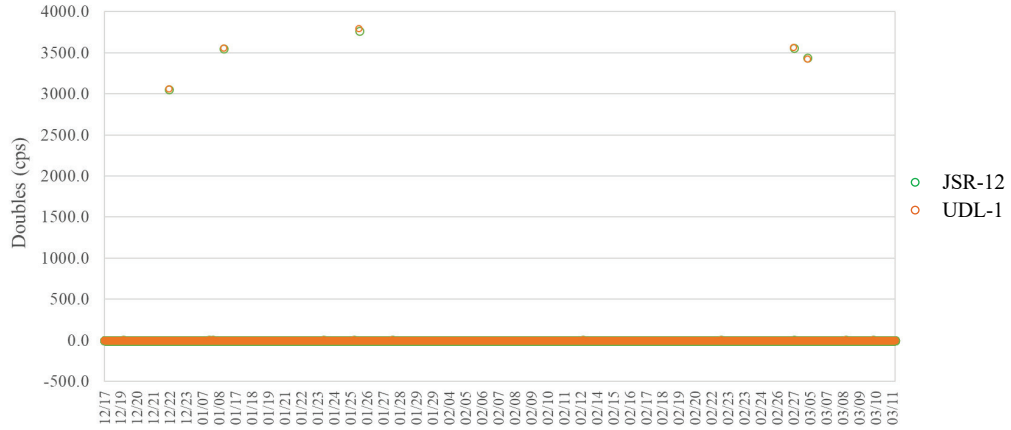

図 2.1.3-40　バックグラウンドのダブル値（2024/12/17～2025/3/11）
（AFAS-P Collar 検出器）

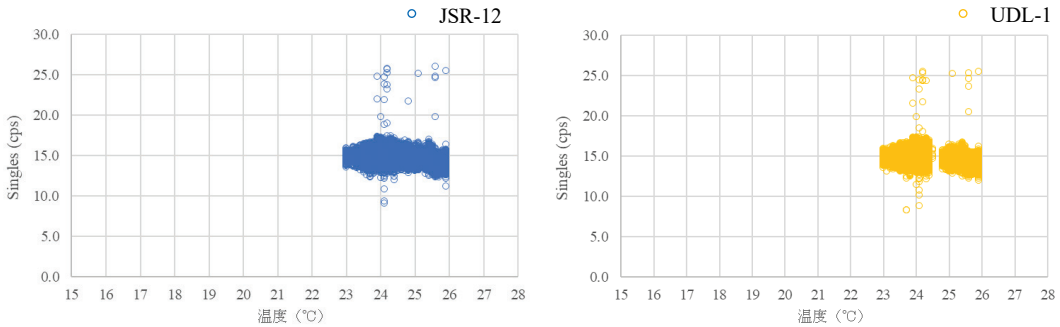

図 2.1.3-41　シングル値と温度の相関（2024/4/5～2024/8/5）
（AFAS-P Collar 検出器）

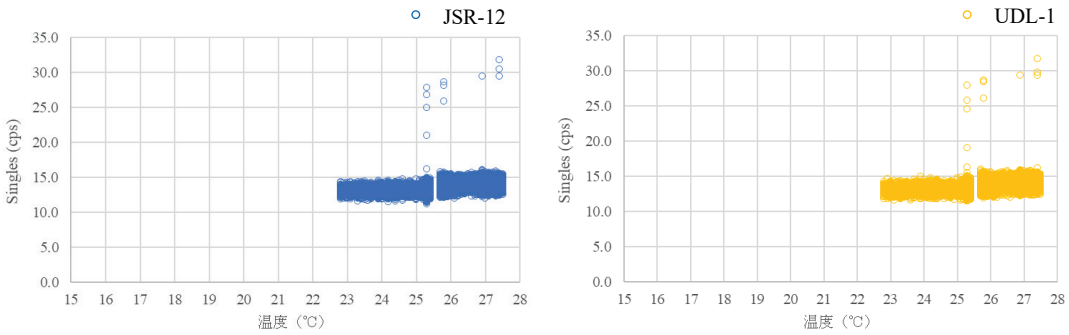

図 2.1.3-42　シングル値と温度の相関（2024/8/24～2024/10/9）
（AFAS-P Collar 検出器）

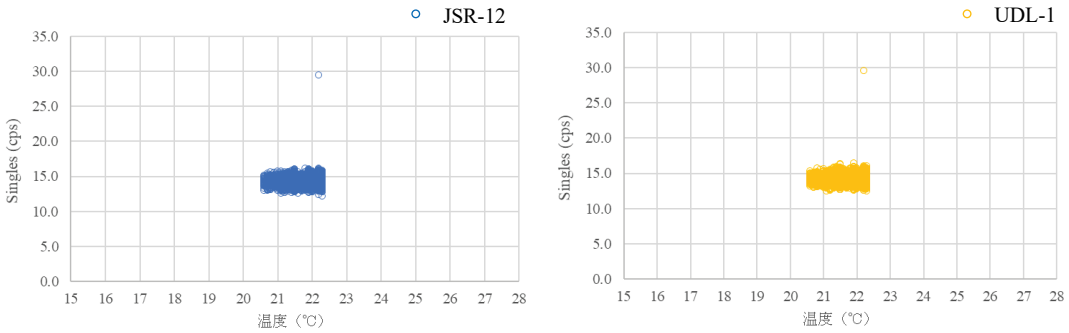

図 2.1.3-43　シングル値と温度の相関（2024/10/11～2024/10/21）
（AFAS-P Collar 検出器）

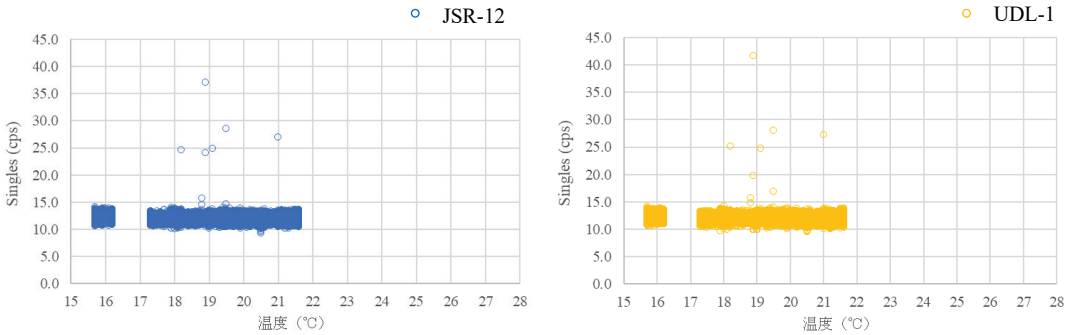

図 2.1.3-44　シングル値と温度の相関（2024/10/24～2024/12/17）
（AFAS-P Collar 検出器）

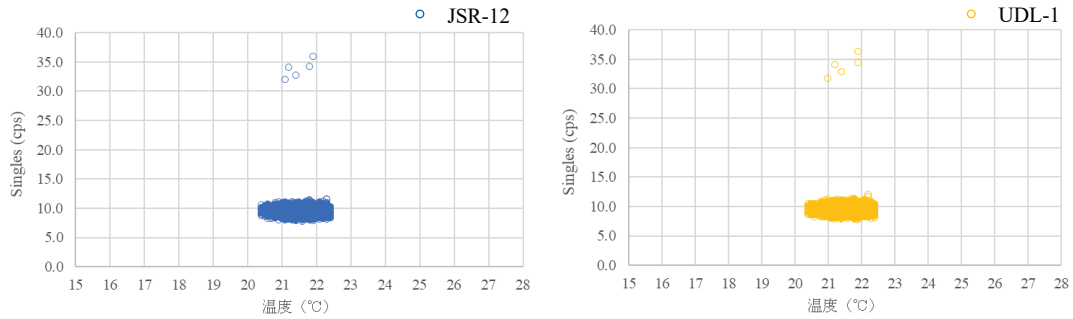

図 2.1.3-45　シングル値と温度の相関（2024/12/17～2025/3/11）
（AFAS-P Collar 検出器）

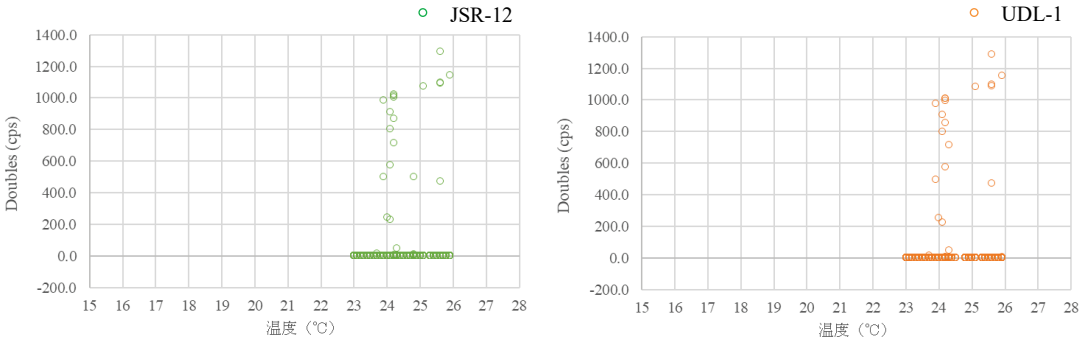

図 2.1.3-46　ダブル値と温度の相関（2024/4/5～2024/8/5）
（AFAS-P Collar 検出器）

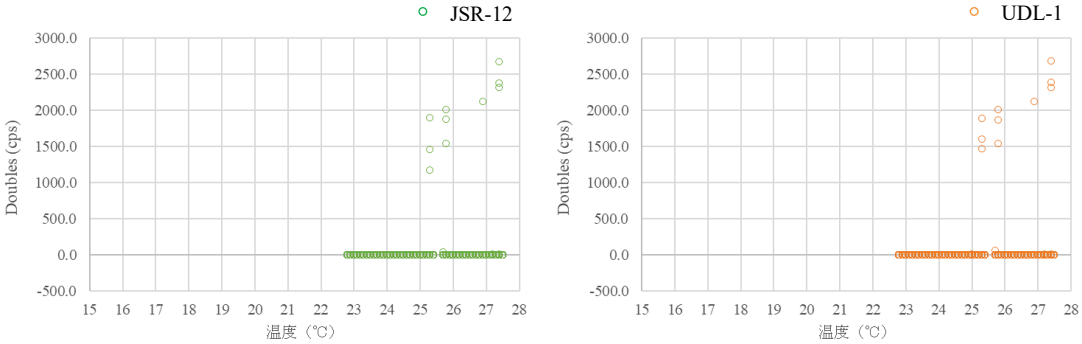

図 2.1.3-47　ダブル値と温度の相関（2024/8/24～2024/10/9）
（AFAS-P Collar 検出器）

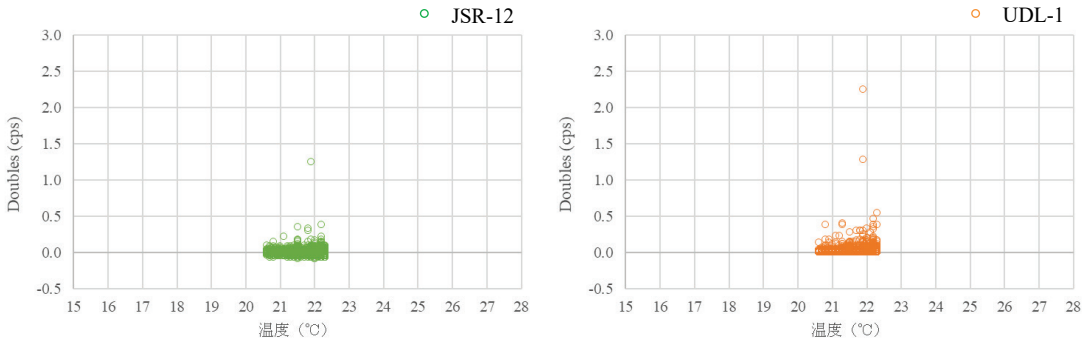

図 2.1.3-48　ダブル値と温度の相関（2024/10/11～2024/10/21）
（AFAS-P Collar 検出器）

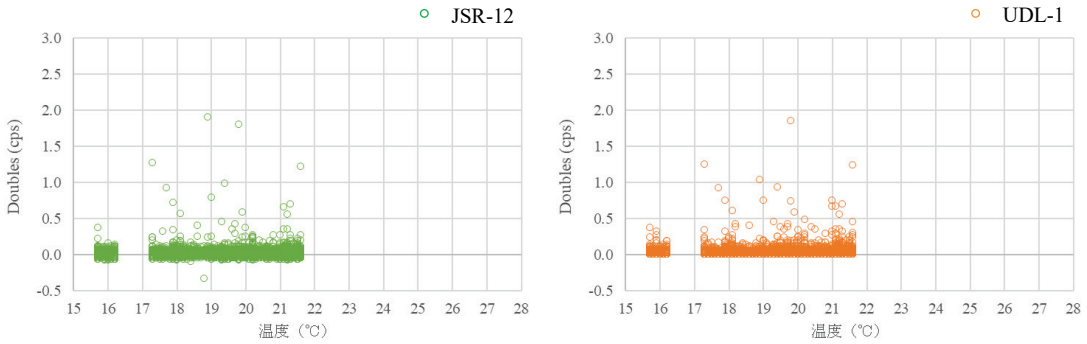

図 2.1.3-49　ダブル値と温度の相関（2024/10/24～2024/12/17）
（AFAS-P Collar 検出器）

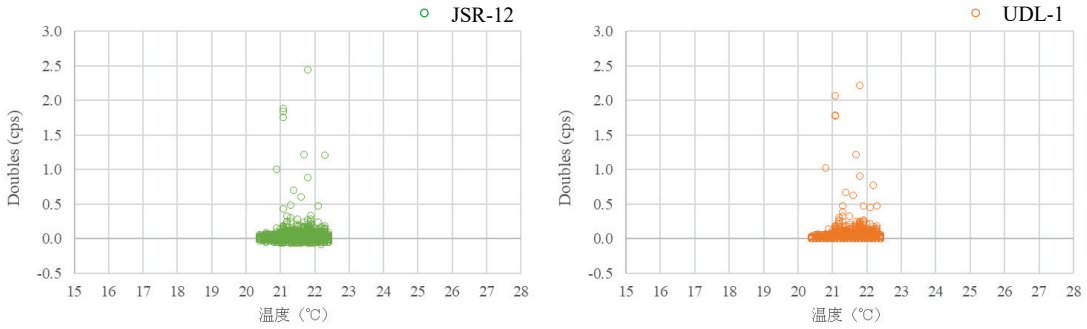

図 2.1.3-50　ダブル値と温度の相関（2024/12/17～2025/3/11）
（AFAS-P Collar 検出器）

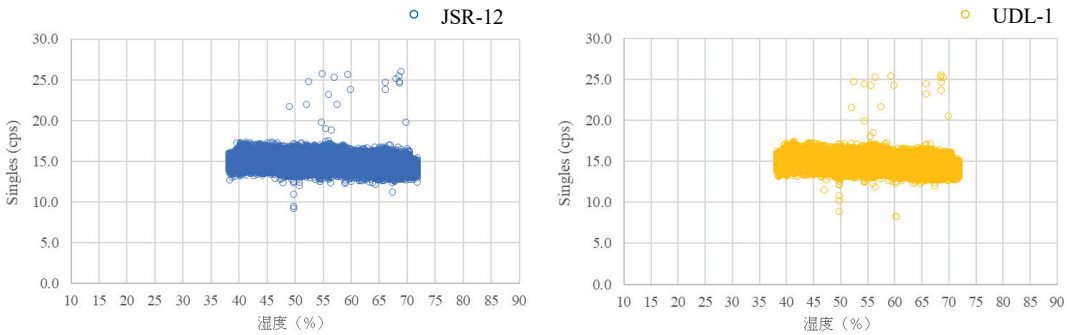

図 2.1.3-51　シングル値と湿度の相関（2024/4/5～2024/8/5）
（AFAS-P Collar 検出器）

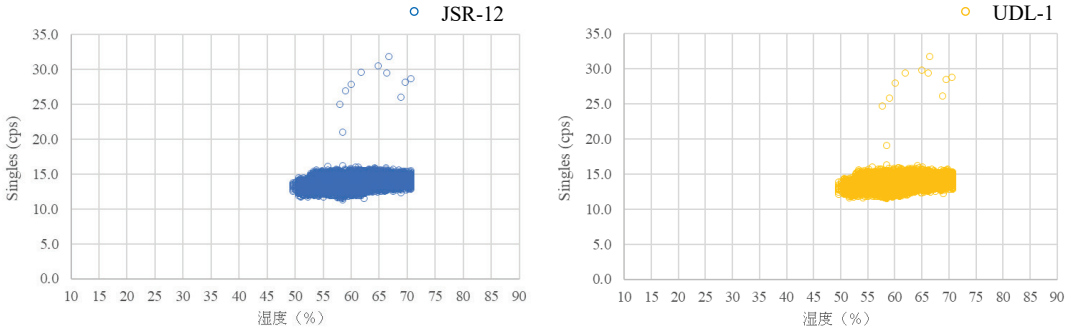

図 2.1.3-52　シングル値と湿度の相関（2024/8/24～2024/10/9）
（AFAS-P Collar 検出器）

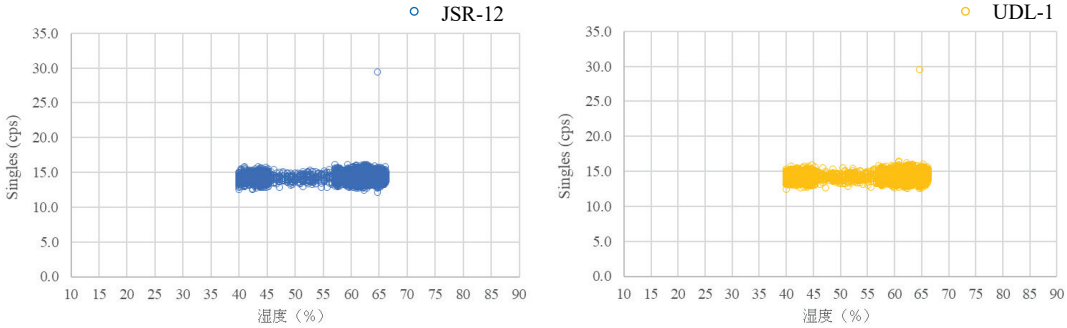

図 2.1.3-53　シングル値と湿度の相関（2024/10/11～2024/10/21）
（AFAS-P Collar 検出器）

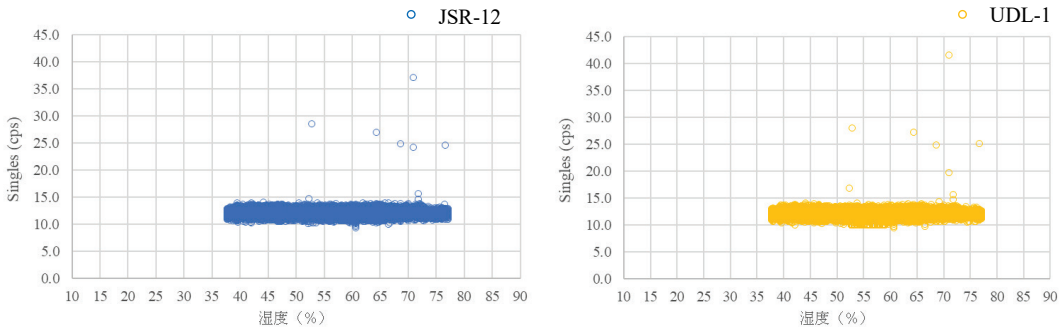

図 2.1.3-54　シングル値と湿度の相関（2024/10/24～2024/12/17）
（AFAS-P Collar 検出器）

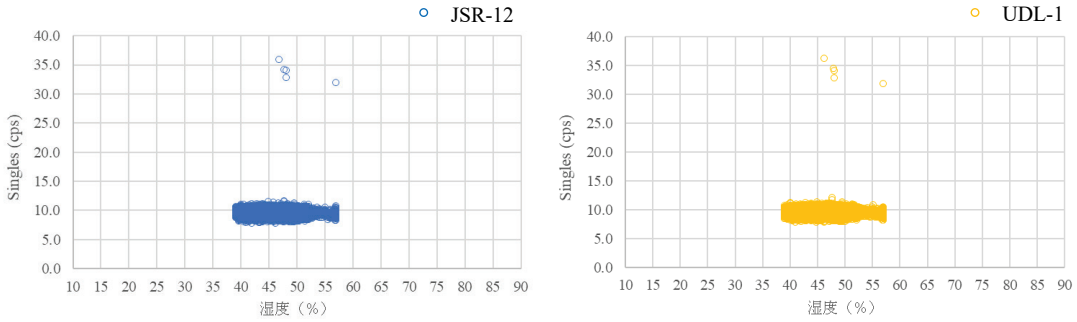

図 2.1.3-55　シングル値と湿度の相関（2024/12/17～2025/3/11）
（AFAS-P Collar 検出器）

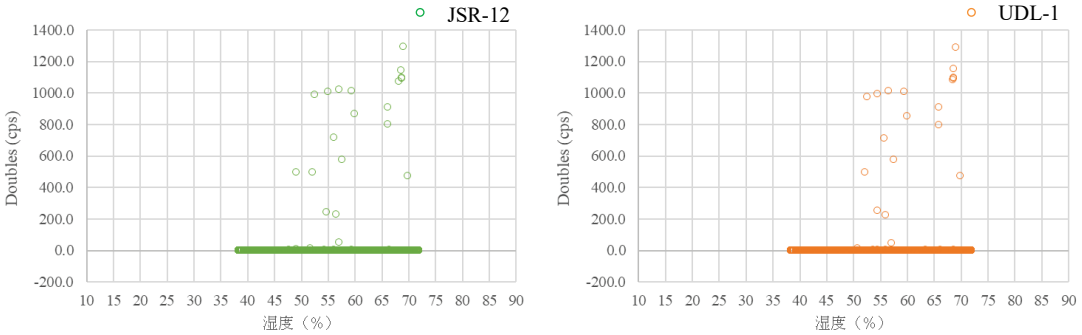

図 2.1.3-56　ダブル値と湿度の相関（2024/4/5～2024/8/5）
（AFAS-P Collar 検出器）

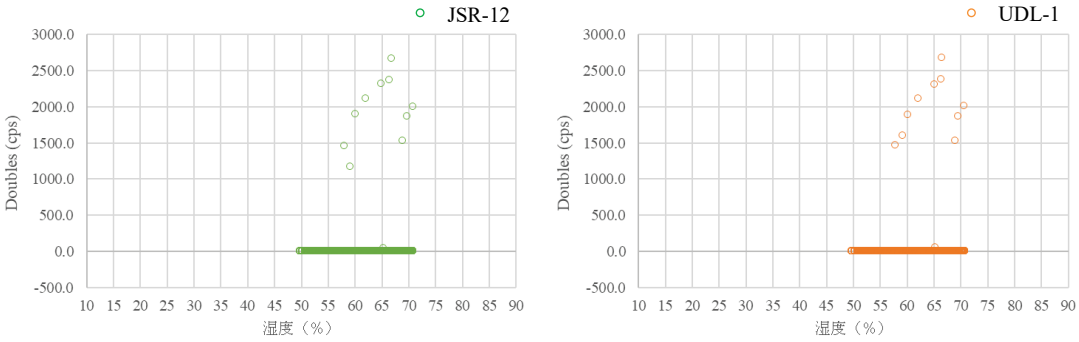

図 2.1.3-57　ダブル値と湿度の相関（2024/8/24～2024/10/9）
（AFAS-P Collar 検出器）

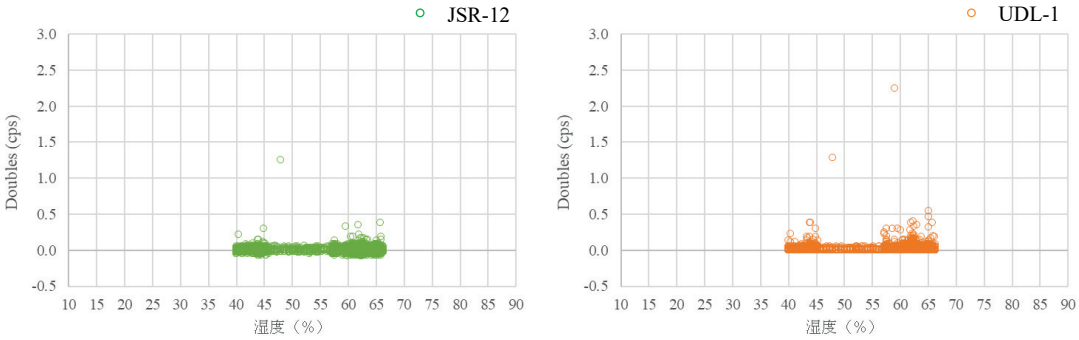

図 2.1.3-58　ダブル値と湿度の相関（2024/10/11～2024/10/21）
（AFAS-P Collar 検出器）

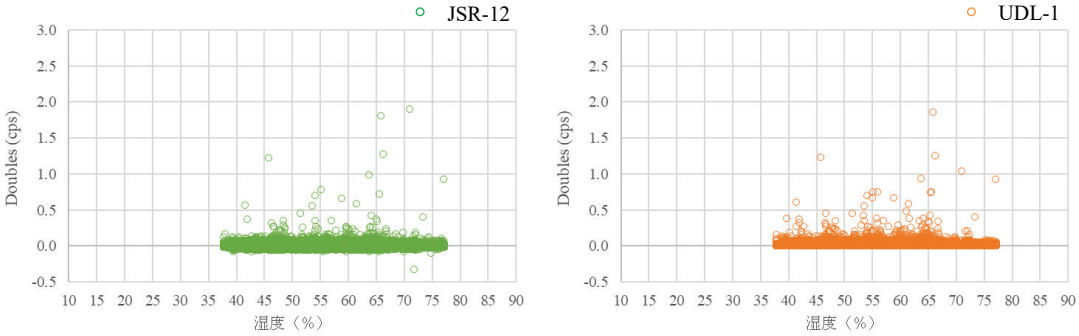

図 2.1.3-59　ダブル値と湿度の相関（2024/10/24～2024/12/17）
（AFAS-P Collar 検出器）

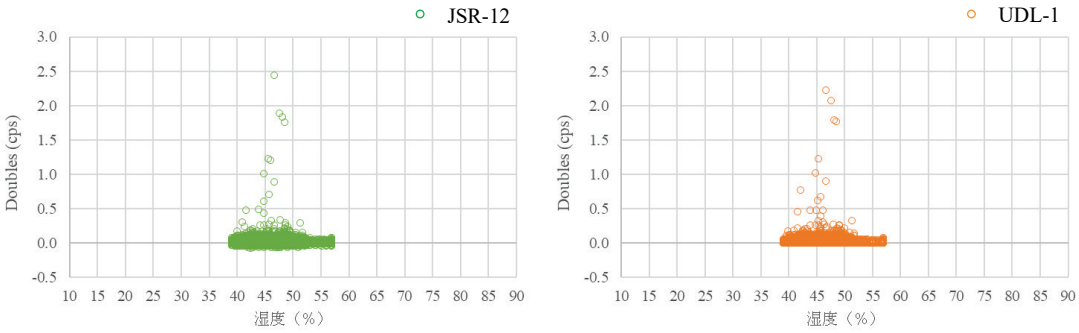

図 2.1.3-60　ダブル値と湿度の相関（2024/12/17～2025/3/11）
（AFAS-P Collar 検出器）

③ AFAS-B Top Fork 検出器

・バックグラウンドのシングル値：図 2.1.3-61～65
・シングル値と温度の相関：図 2.1.3-66～70
・シングル値と湿度の相関：図 2.1.3-71～75

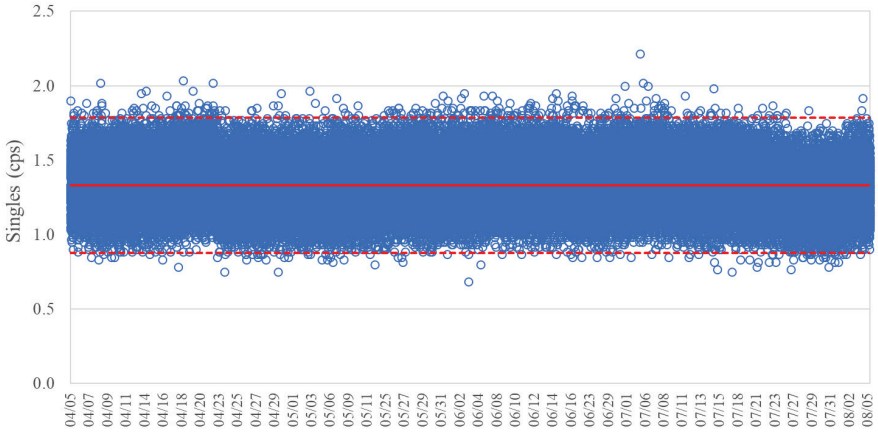

図 2.1.3-61　バックグラウンドのシングル値（2024/4/5～2024/8/5）
（AFAS-B Top Fork 検出器）

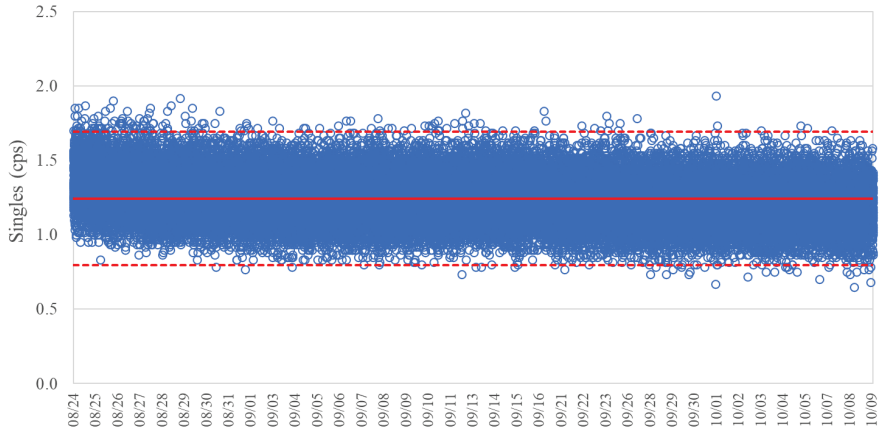

図 2.1.3-62　バックグラウンドのシングル値（2024/8/24～2024/10/9）
（AFAS-B Top Fork 検出器）

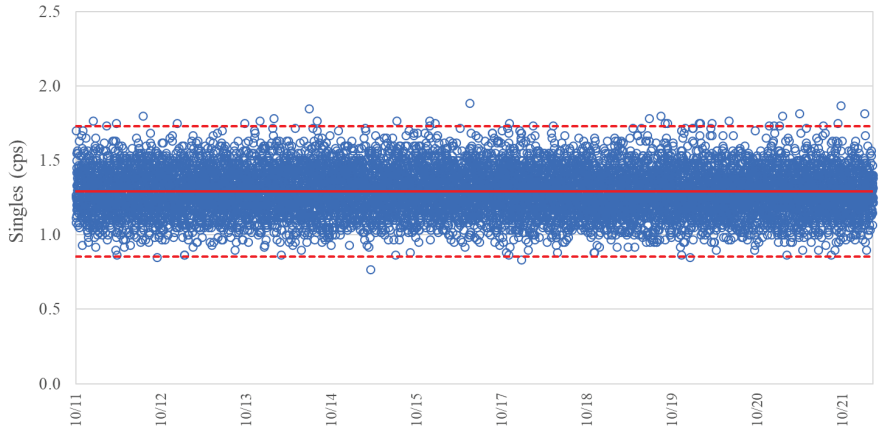

図 2.1.3-63　バックグラウンドのシングル値（2024/10/11～2024/10/21）
（AFAS-B Top Fork 検出器）

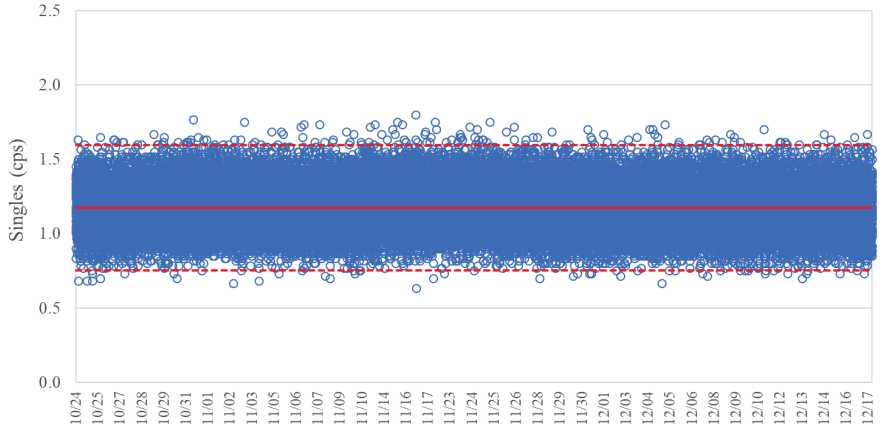

図 2.1.3-64　バックグラウンドのシングル値（2024/10/24～2024/12/17）
（AFAS-B Top Fork 検出器）

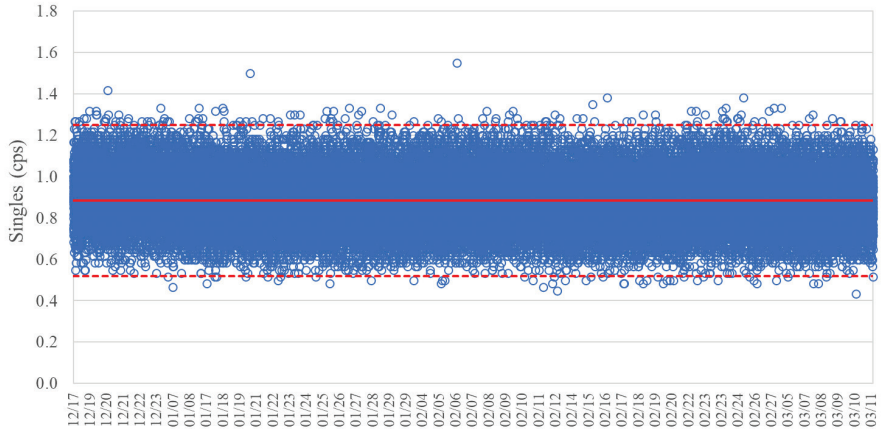

図 2.1.3-65　バックグラウンドのシングル値（2024/12/17～2025/3/11）
（AFAS-B Top Fork 検出器）

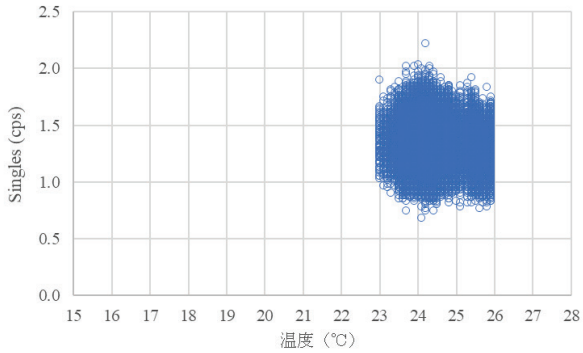

図 2.1.3-66　シングル値と温度の相関（2024/4/5～2024/8/5）
（AFAS-B Top Fork 検出器）

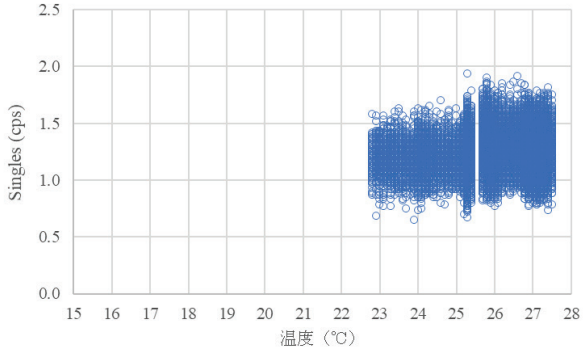

図 2.1.3-67　シングル値と温度の相関（2024/8/24～2024/10/9）
（AFAS-B Top Fork 検出器）

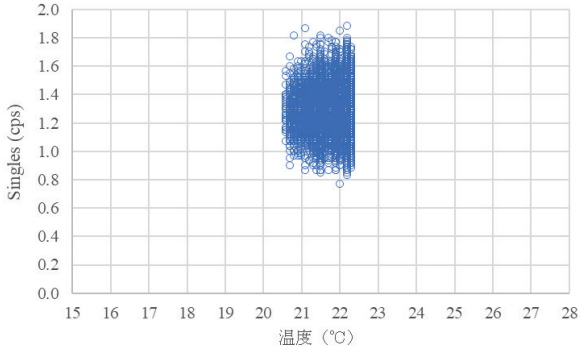

図 2.1.3-68　シングル値と温度の相関（2024/10/11～2024/10/21）
（AFAS-B Top Fork 検出器）

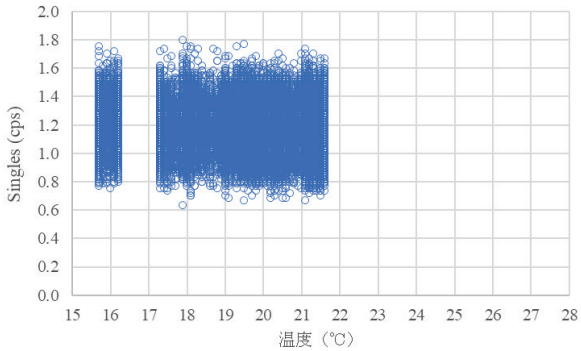

図 2.1.3-69　シングル値と温度の相関（2024/10/24～2024/12/17）
（AFAS-B Top Fork 検出器）

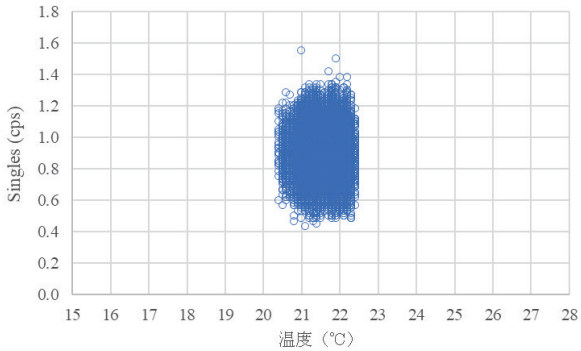

図 2.1.3-70　シングル値と温度の相関（2024/12/17～2025/3/11）
（AFAS-B Top Fork 検出器）

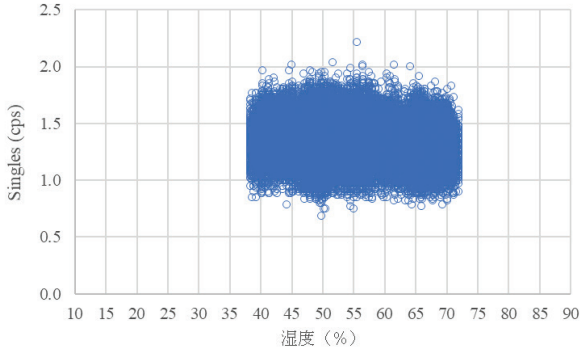

図 2.1.3-71　シングル値と湿度の相関（2024/4/5～2024/8/5）
（AFAS-B Top Fork 検出器）

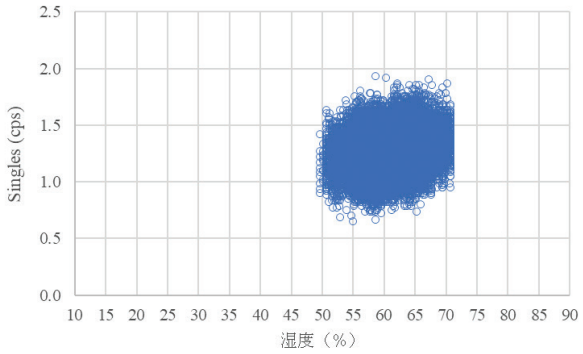

図 2.1.3-72　シングル値と湿度の相関（2024/8/24～2024/10/9）
（AFAS-B Top Fork 検出器）

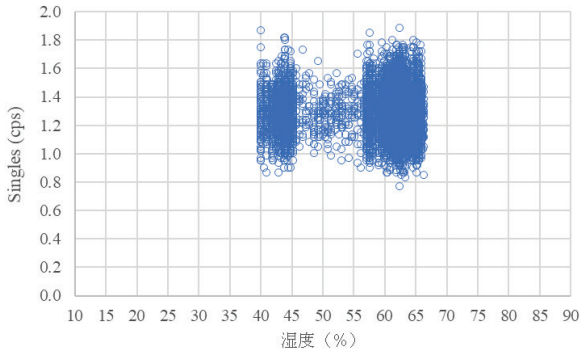

図 2.1.3-73　シングル値と湿度の相関（2024/10/11～2024/10/21）
（AFAS-B Top Fork 検出器）

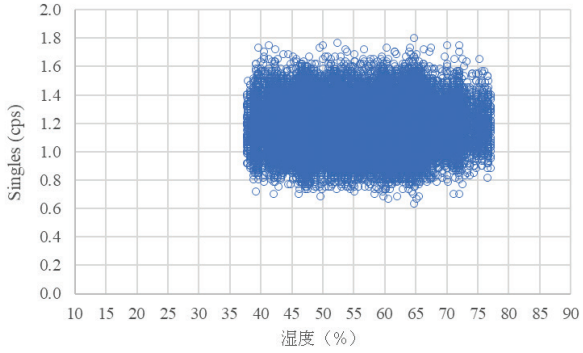

図 2.1.3-74　シングル値と湿度の相関（2024/10/24～2024/12/17）
（AFAS-B Top Fork 検出器）

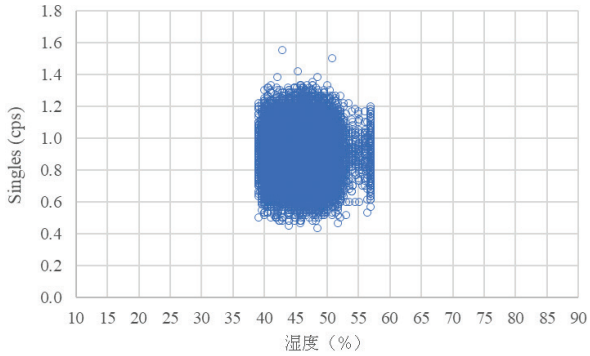

図 2.1.3-75　シングル値と湿度の相関（2024/12/17～2025/3/11）
（AFAS-B Top Fork 検出器）

④ AFAS-P Top Fork 検出器

・バックグラウンドのシングル値：図 2.1.3-76～80
・シングル値と温度の相関：図 2.1.3-81～85
・シングル値と湿度の相関：図 2.1.3-86～90

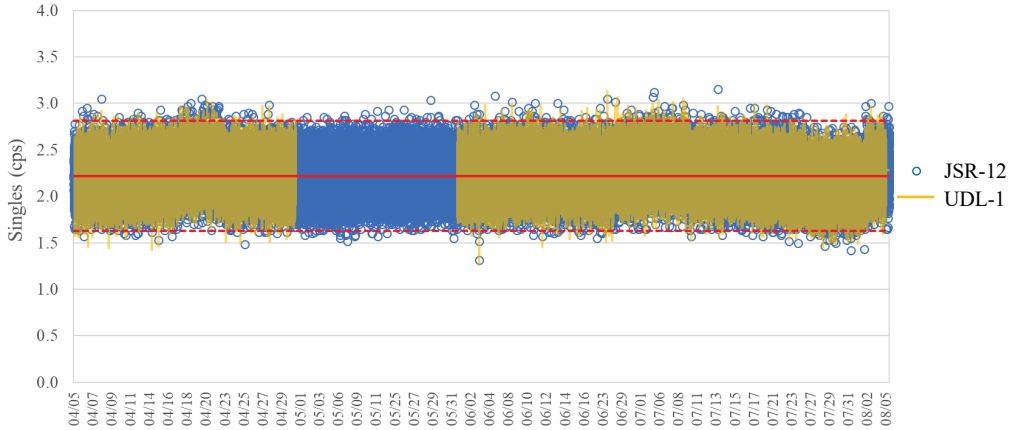

図 2.1.3-76　バックグラウンドのシングル値（2024/4/5～2024/8/5）
（AFAS-P Top Fork 検出器）

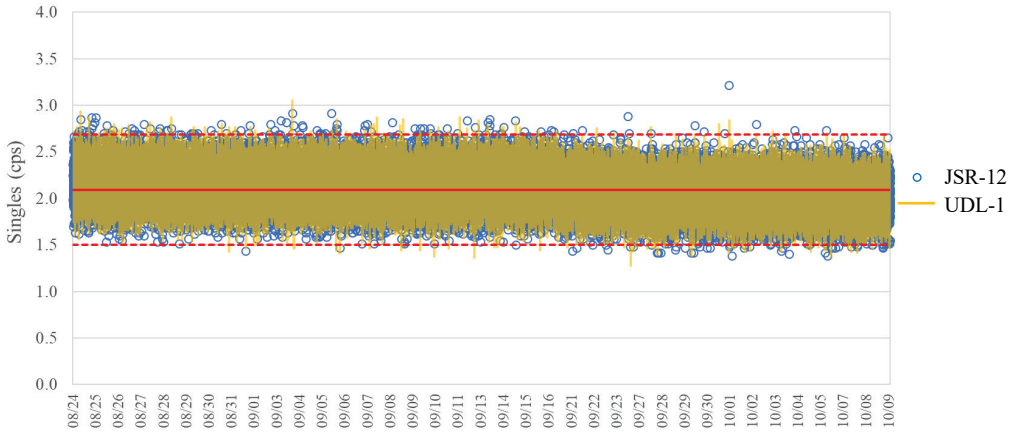

図 2.1.3-77　バックグラウンドのシングル値（2024/8/24～2024/10/9）
（AFAS-P Top Fork 検出器）

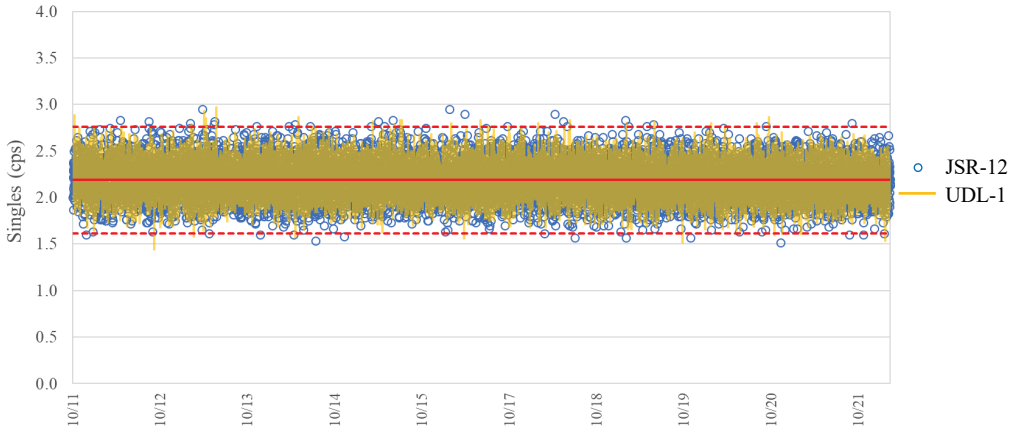

図 2.1.3-78　バックグラウンドのシングル値（2024/10/11～2024/10/21）
（AFAS-P Top Fork 検出器）

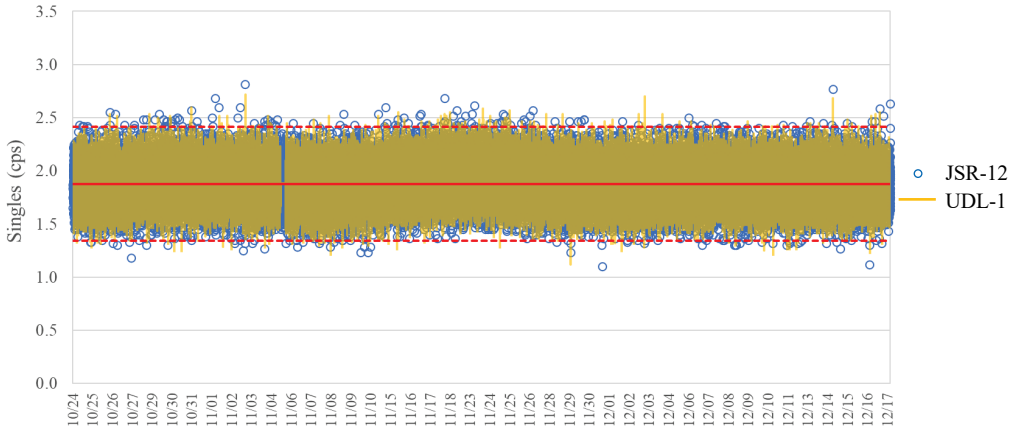

図 2.1.3-79　バックグラウンドのシングル値（2024/10/24～2024/12/17）
（AFAS-P Top Fork 検出器）

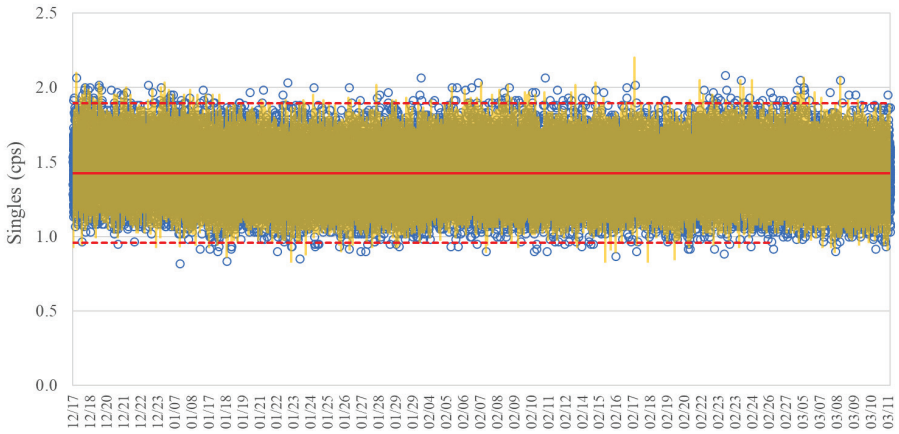

図 2.1.3-80　バックグラウンドのシングル値（2024/12/17～2025/3/11）
（AFAS-P Top Fork 検出器）

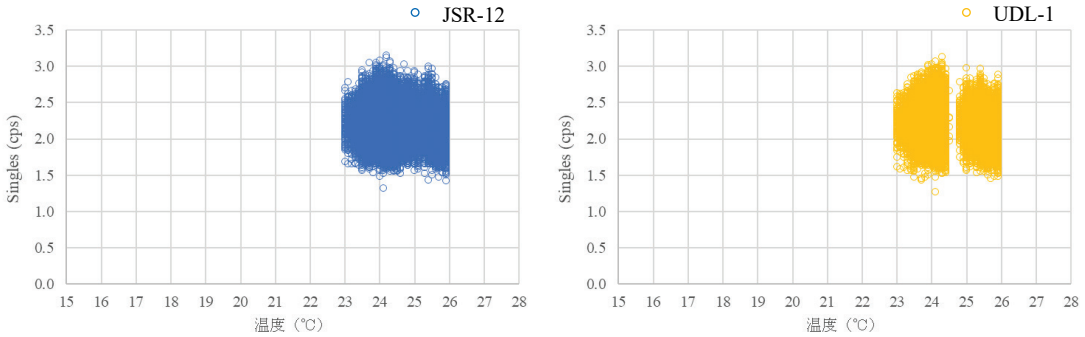

図 2.1.3-81　シングル値と温度の相関（2024/4/5～2024/8/5）
（AFAS-P Top Fork 検出器）

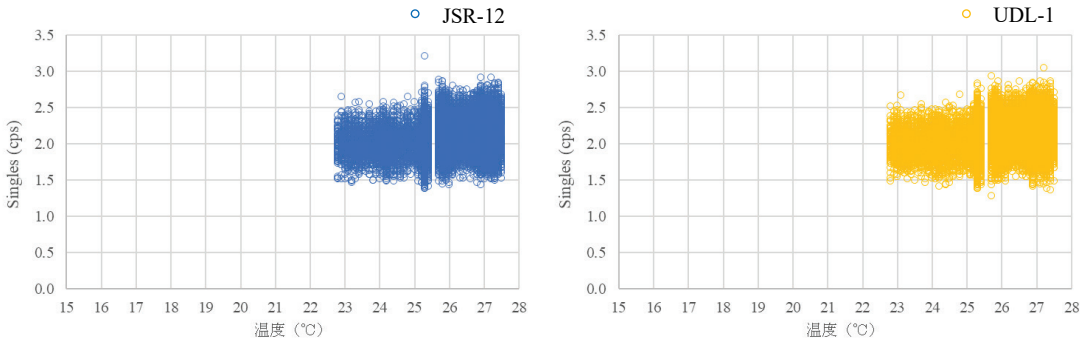

図 2.1.3-82　シングル値と温度の相関（2024/8/24～2024/10/9）
（AFAS-P Top Fork 検出器）

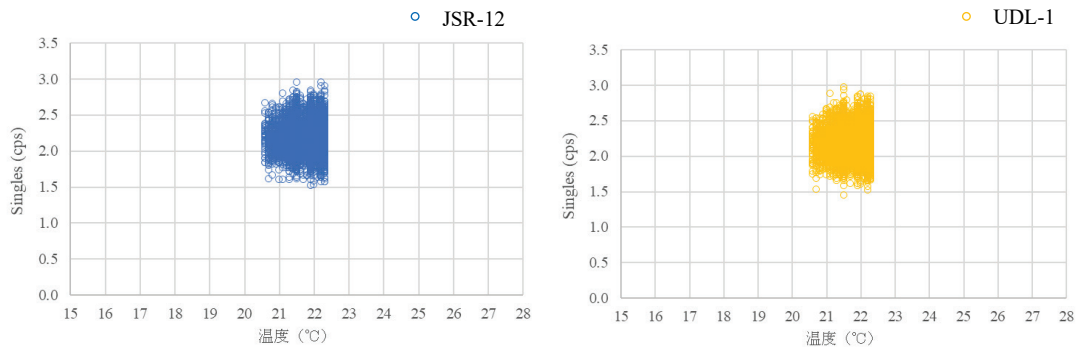

図 2.1.3-83　シングル値と温度の相関（2024/10/11～2024/10/21）
（AFAS-P Top Fork 検出器）

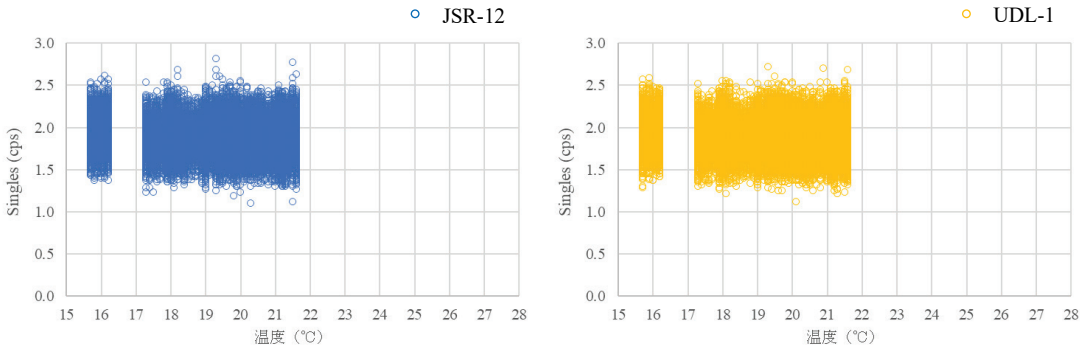

図 2.1.3-84　シングル値と温度の相関（2024/10/24～2024/12/17）
（AFAS-P Top Fork 検出器）

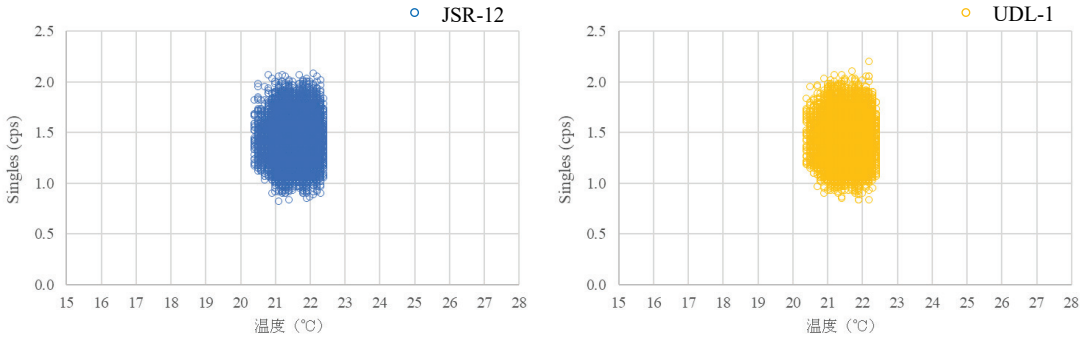

図 2.1.3-85　シングル値と温度の相関（2024/12/17～2025/3/11）
（AFAS-P Top Fork 検出器）

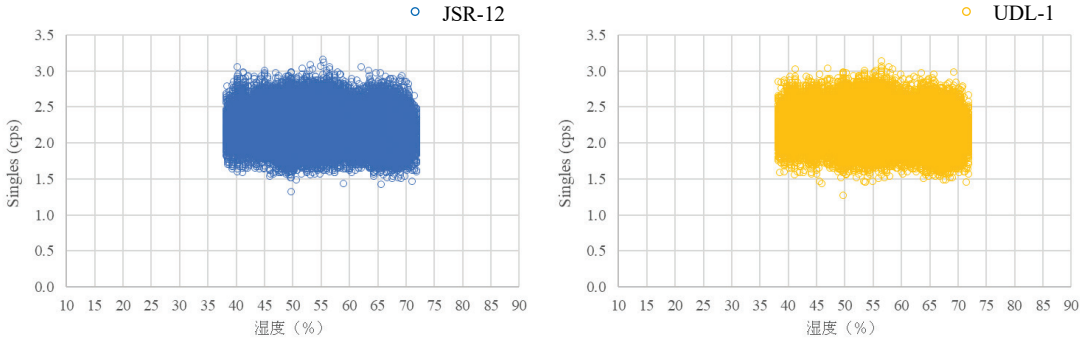

図 2.1.3-86　シングル値と湿度の相関（2024/4/5～2024/8/5）
（AFAS-P Top Fork 検出器）

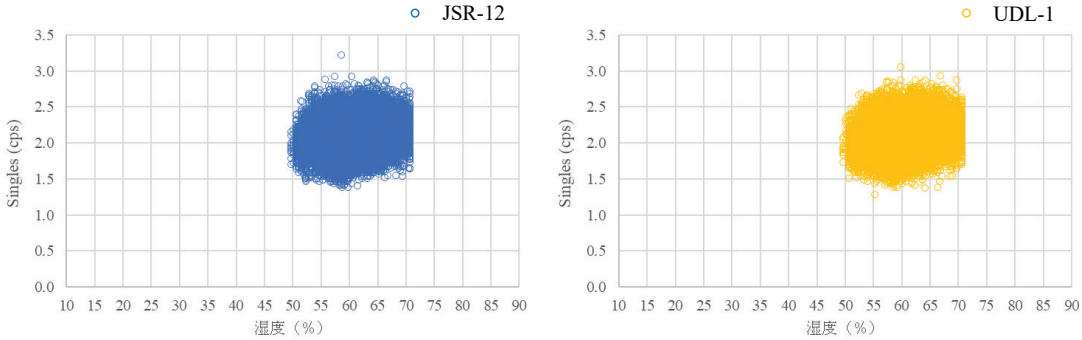

図 2.1.3-87　シングル値と湿度の相関（2024/8/24～2024/10/9）
（AFAS-P Top Fork 検出器）

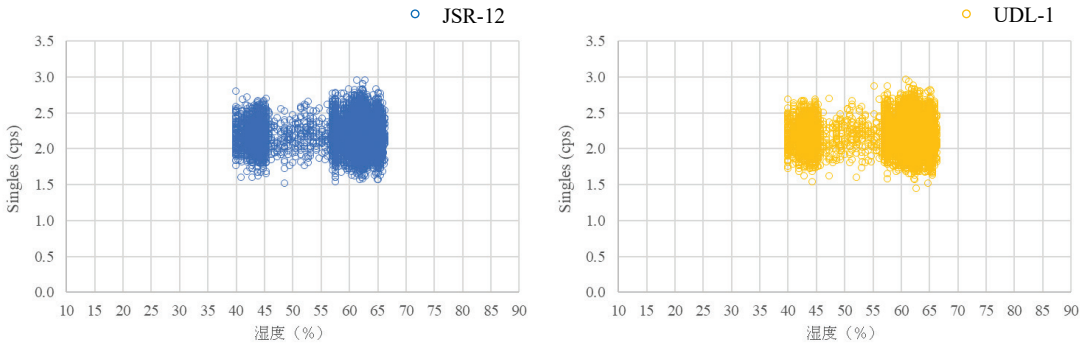

図 2.1.3-88　シングル値と湿度の相関（2024/10/11～2024/10/21）
（AFAS-P Top Fork 検出器）

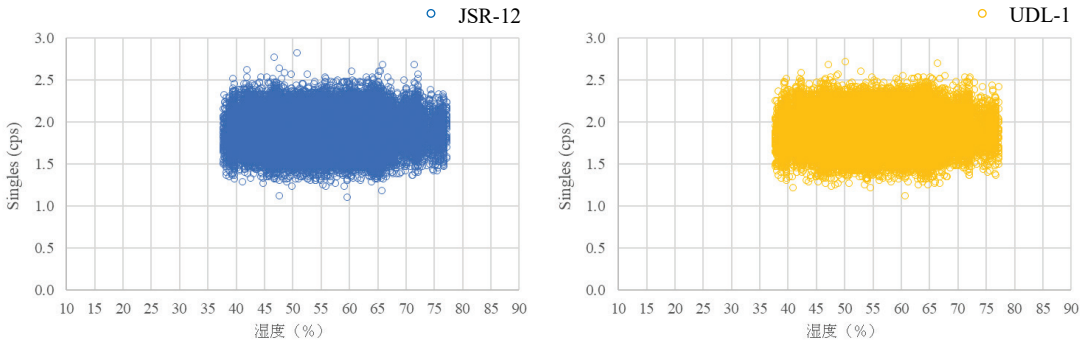

図 2.1.3-89　シングル値と湿度の相関（2024/10/24～2024/12/17）
（AFAS-P Top Fork 検出器）

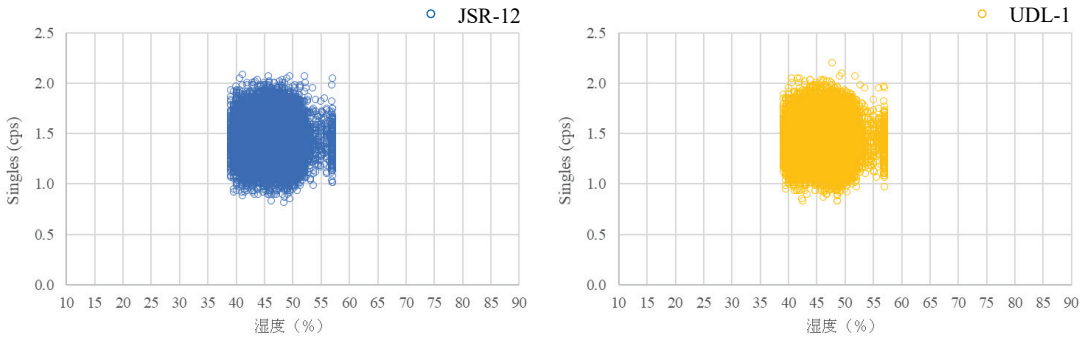

図 2.1.3-90　シングル値と湿度の相関（2024/12/17～2025/3/11）
（AFAS-P Top Fork 検出器）

⑤ AFAS-B Bottom Fork 検出器

・バックグラウンドのシングル値：図 2.1.3-91～95

・シングル値と温度の相関：図 2.1.3-96～100

・シングル値と湿度の相関：図 2.1.3-101～105

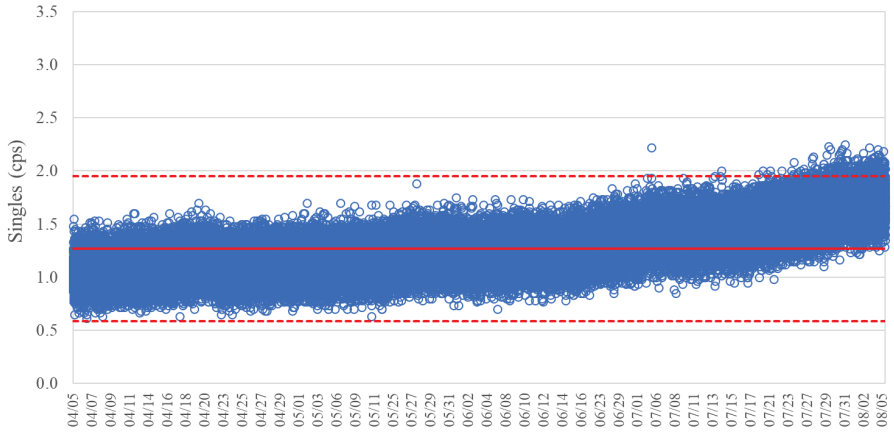

図 2.1.3-91　バックグラウンドのシングル値（2024/4/5～2024/8/5）
（AFAS-B Bottom Fork 検出器）

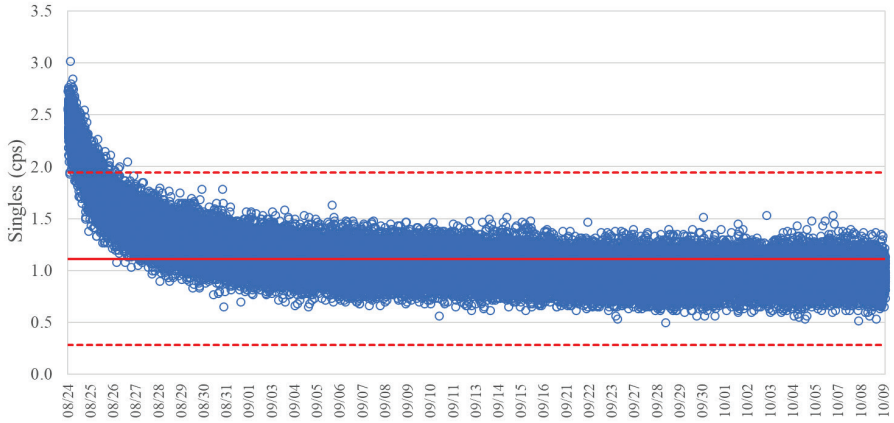

図 2.1.3-92　バックグラウンドのシングル値（2024/8/24～2024/10/9）
（AFAS-B Bottom Fork 検出器）

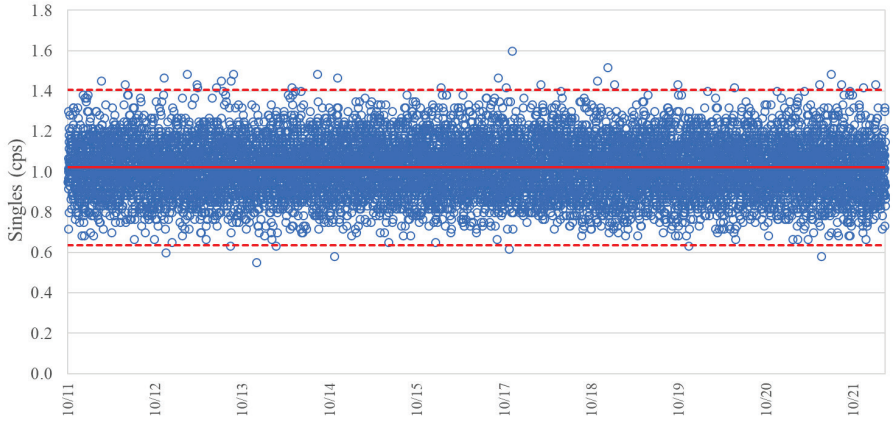

図 2.1.3-93　バックグラウンドのシングル値（2024/10/11～2024/10/21）
（AFAS-B Bottom Fork 検出器）

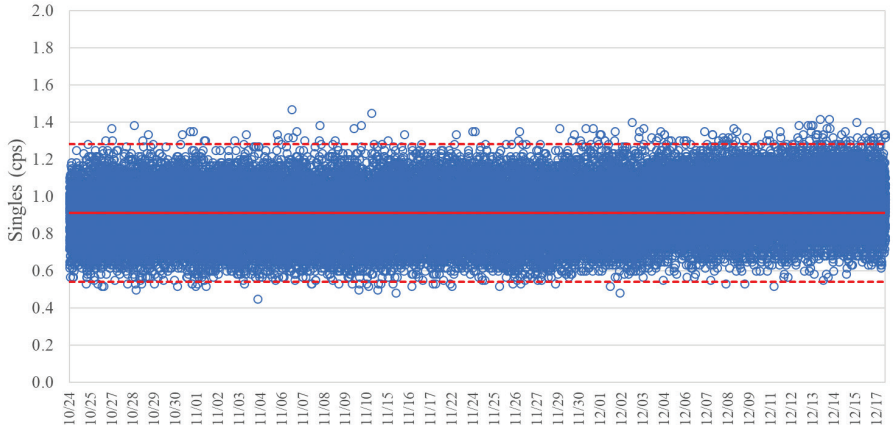

図 2.1.3-94　バックグラウンドのシングル値（2024/10/24～2024/12/17）
（AFAS-B Bottom Fork 検出器）

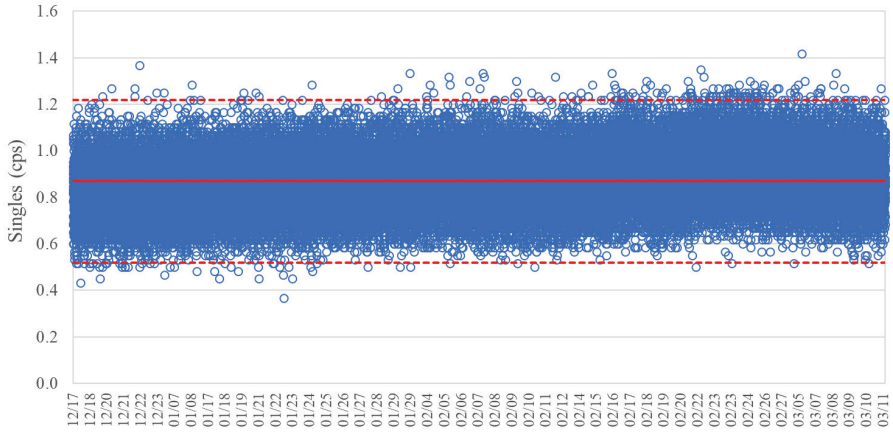

図 2.1.3-95　バックグラウンドのシングル値（2024/12/17～2025/3/11）
（AFAS-B Bottom Fork 検出器）

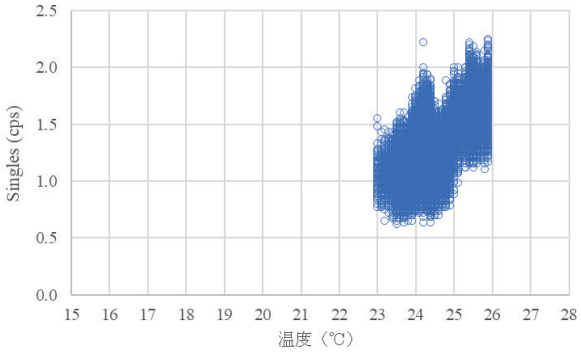

図 2.1.3-96　シングル値と温度の相関（2024/4/5～2024/8/5）
（AFAS-B Bottom Fork 検出器）

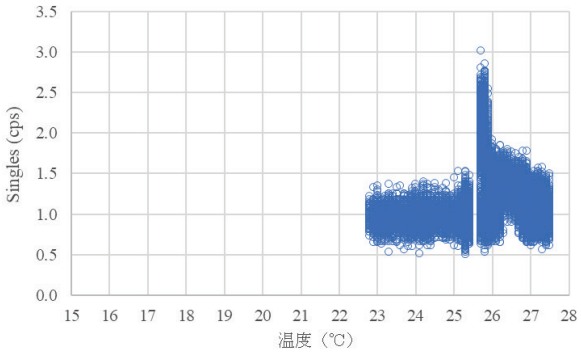

図 2.1.3-97　シングル値と温度の相関（2024/8/24～2024/10/9）
（AFAS-B Bottom Fork 検出器）

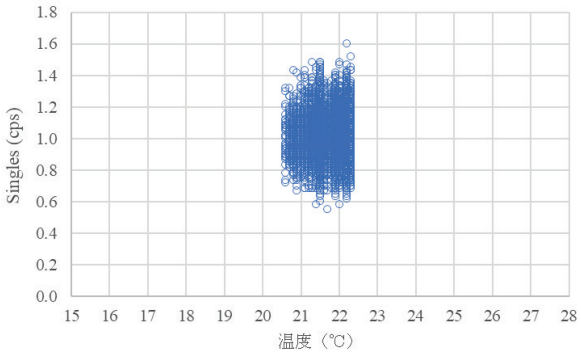

図 2.1.3-98　シングル値と温度の相関（2024/10/11～2024/10/21）
（AFAS-B Bottom Fork 検出器）

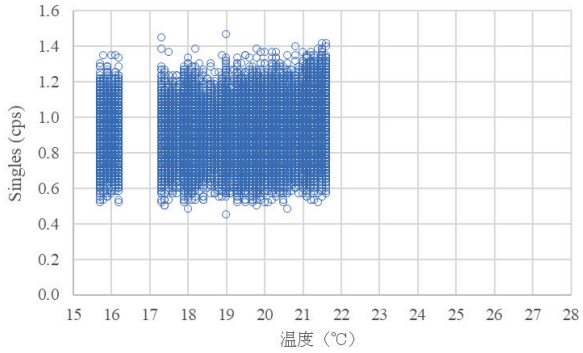

図 2.1.3-99　シングル値と温度の相関（2024/10/24～2024/12/17）
（AFAS-B Bottom Fork 検出器）

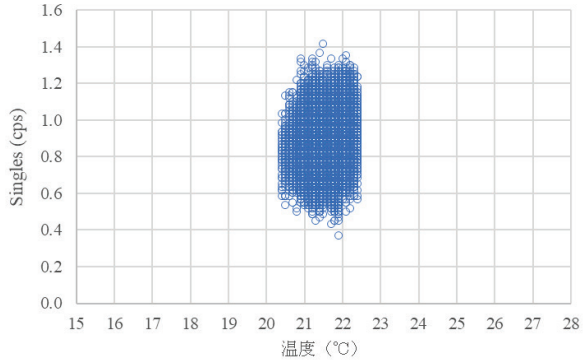

図 2.1.3-100　シングル値と温度の相関（2024/12/17～2025/3/11）
（AFAS-B Bottom Fork 検出器）

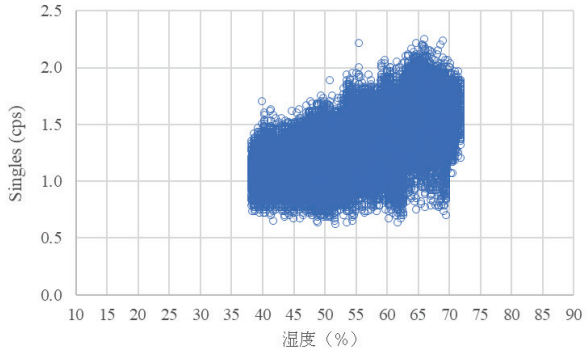

図 2.1.3-101　シングル値と湿度の相関（2024/4/5～2024/8/5）
（AFAS-B Bottom Fork 検出器）

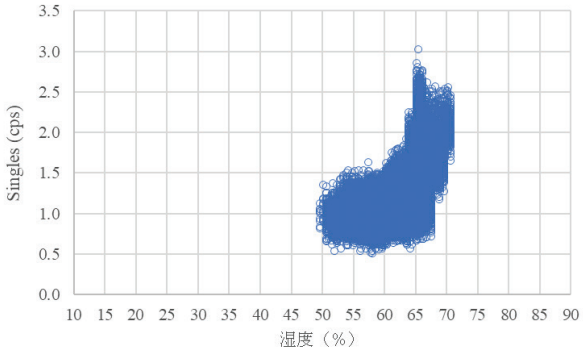

図 2.1.3-102　シングル値と湿度の相関（2024/8/24～2024/10/9）
（AFAS-B Bottom Fork 検出器）

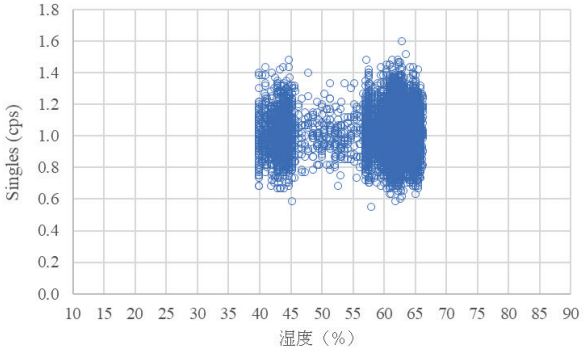

図 2.1.3-103　シングル値と湿度の相関（2024/10/11～2024/10/21）
（AFAS-B Bottom Fork 検出器）

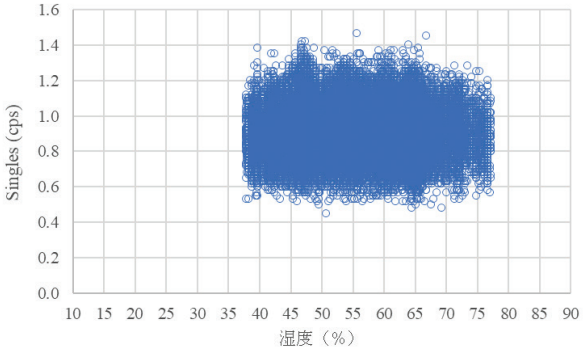

図 2.1.3-104　シングル値と湿度の相関（2024/10/24～2024/12/17）
（AFAS-B Bottom Fork 検出器）

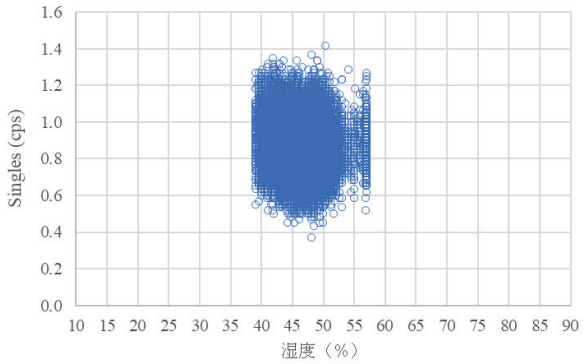

図 2.1.3-105　シングル値と湿度の相関（2024/12/17～2025/3/11）
（AFAS-B Bottom Fork 検出器）

⑥ AFAS-P Bottom Fork 検出器

・バックグラウンドのシングル値：図 2.1.3-106～110
・シングル値と温度の相関：図 2.1.3-111～115
・シングル値と湿度の相関：図 2.1.3-116～120

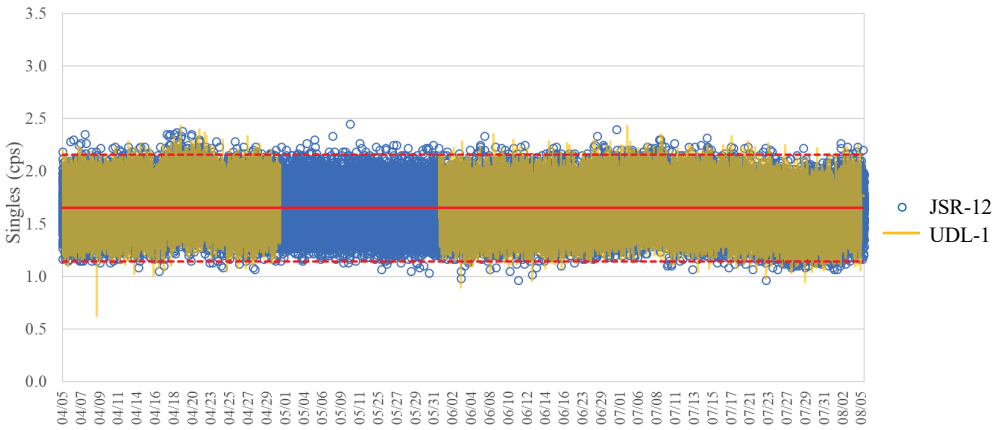

図 2.1.3-106　バックグラウンドのシングル値（2024/4/5～2024/8/5）
（AFAS-P Bottom Fork 検出器）

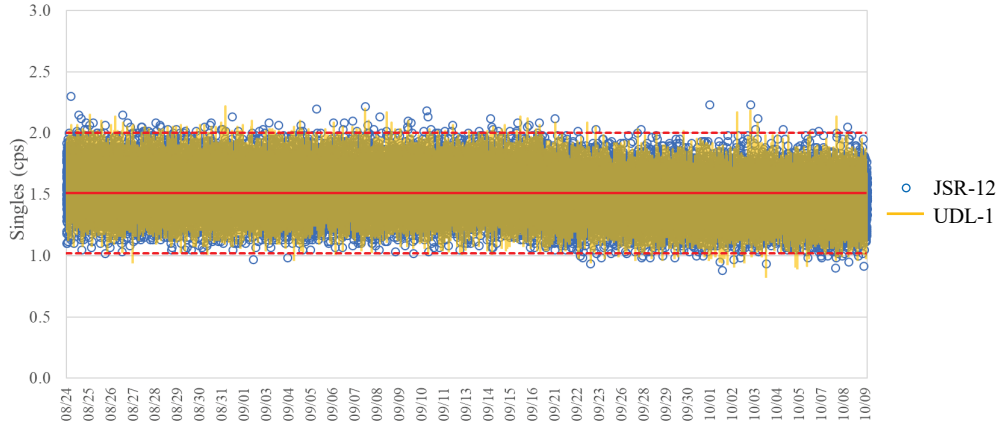

図 2.1.3-107　バックグラウンドのシングル値（2024/8/24～2024/10/9）
（AFAS-P Bottom Fork 検出器）

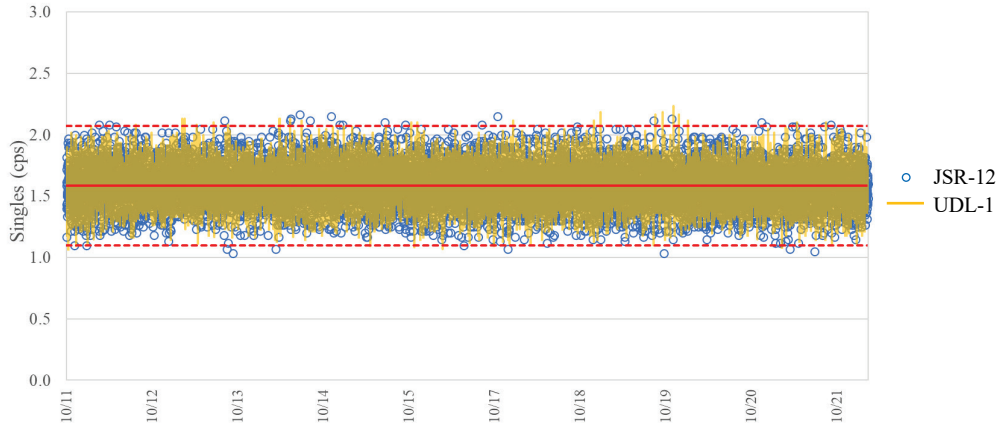

図 2.1.3-108　バックグラウンドのシングル値（2024/10/11～2024/10/21）
（AFAS-P Bottom Fork 検出器）

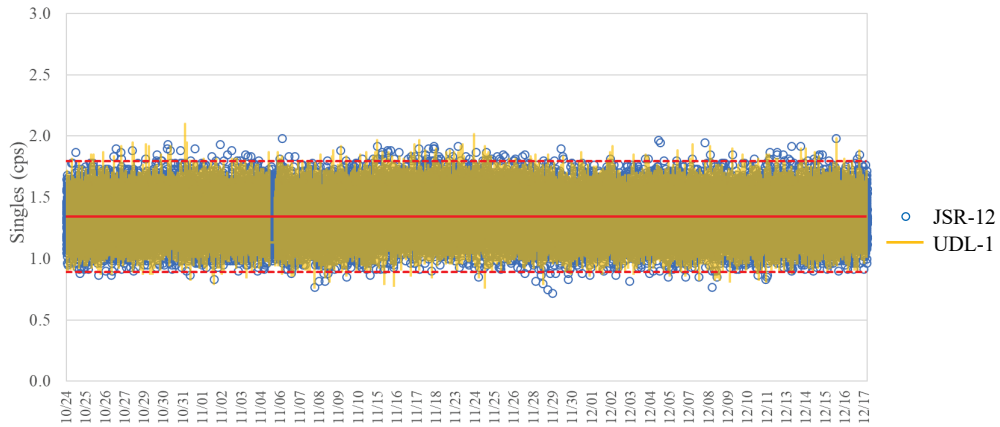

図 2.1.3-109　バックグラウンドのシングル値（2024/10/24～2024/12/17）
（AFAS-P Bottom Fork 検出器）

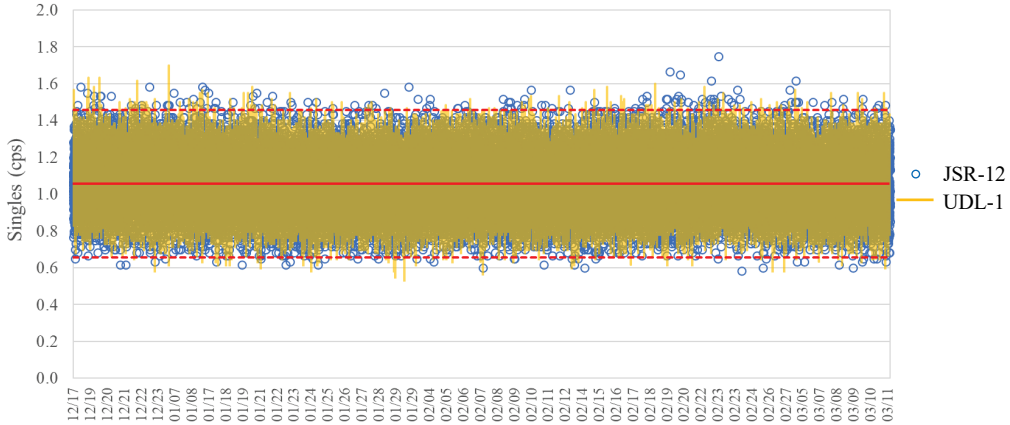

図 2.1.3-110　バックグラウンドのシングル値（2024/12/17～2025/3/11）
（AFAS-P Bottom Fork 検出器）

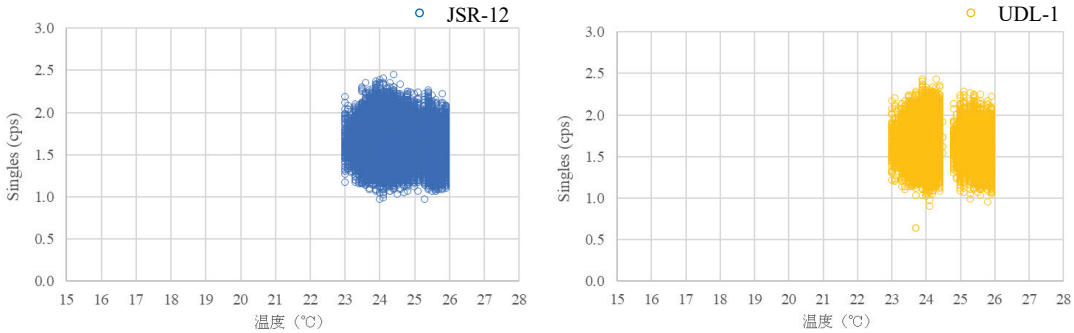

図 2.1.3-111　シングル値と温度の相関（2024/4/5～2024/8/5）
（AFAS-P Bottom Fork 検出器）

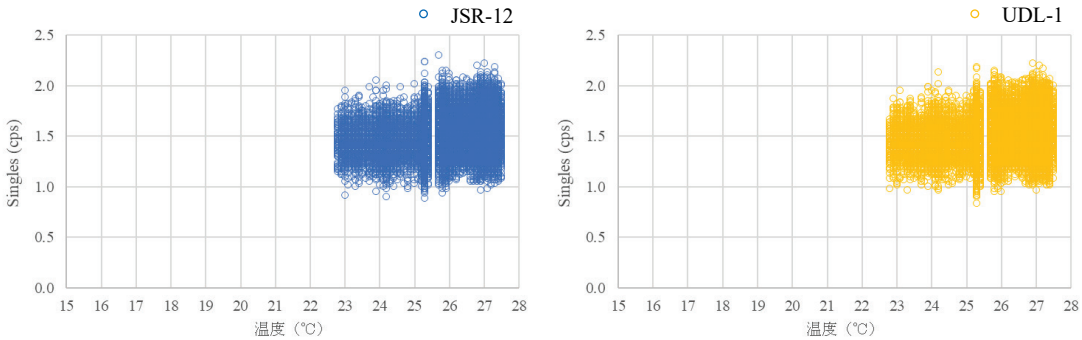

図 2.1.3-112　シングル値と温度の相関（2024/8/24～2024/10/9）
（AFAS-P Bottom Fork 検出器）

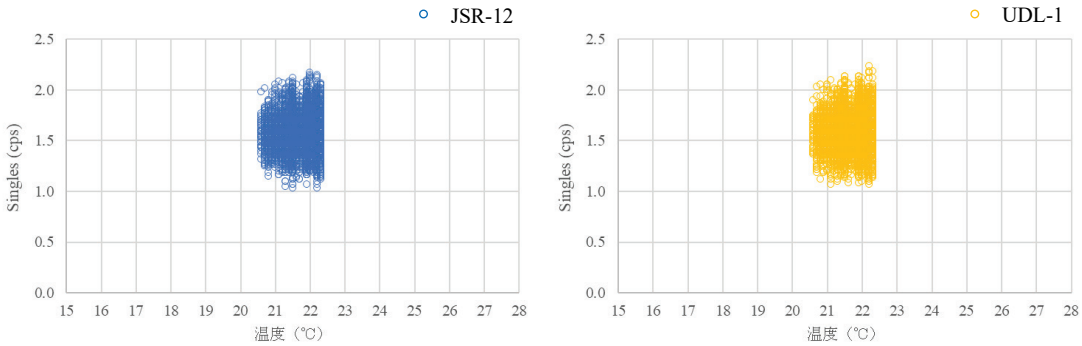

図 2.1.3-113　シングル値と温度の相関（2024/10/11～2024/10/21）
（AFAS-P Bottom Fork 検出器）

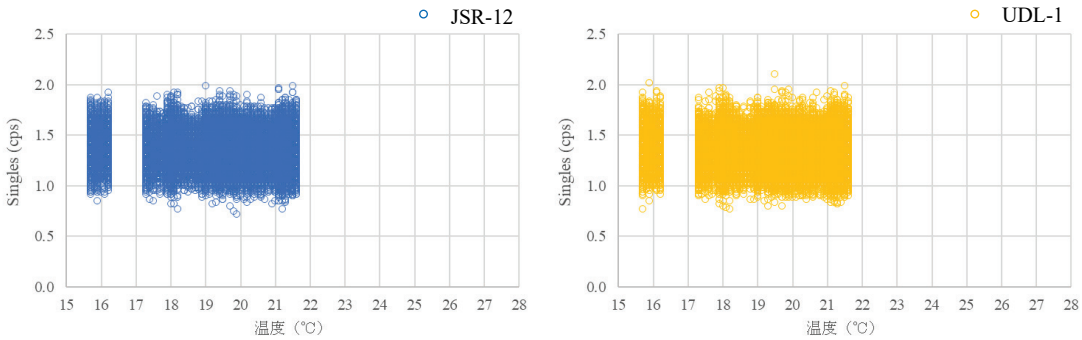

図 2.1.3-114　シングル値と温度の相関（2024/10/24～2024/12/17）
（AFAS-P Bottom Fork 検出器）

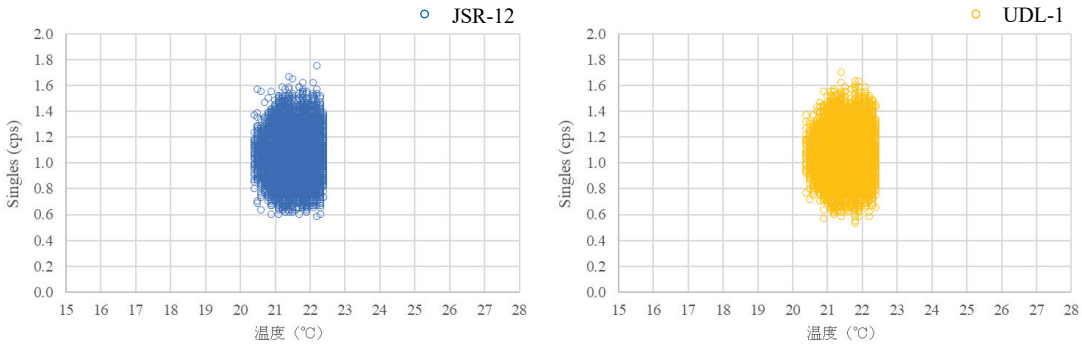

図 2.1.3-115　シングル値と温度の相関（2024/12/17～2025/3/11）
（AFAS-P Bottom Fork 検出器）

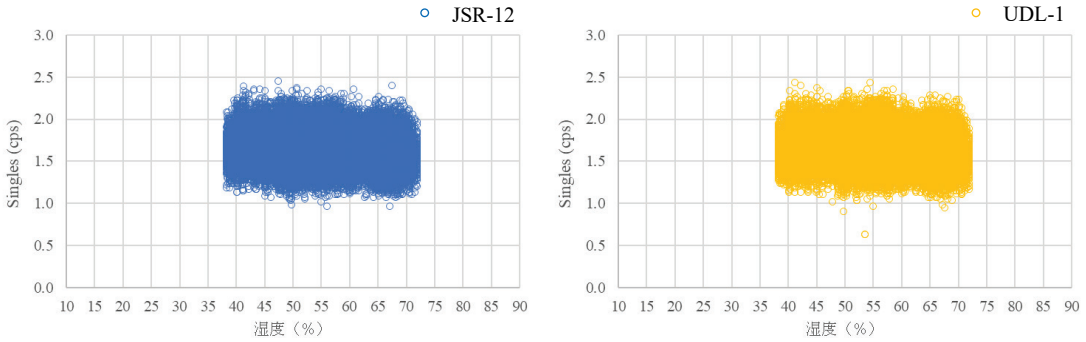

図 2.1.3-116　シングル値と湿度の相関（2024/4/5～2024/8/5）
（AFAS-P Bottom Fork 検出器）

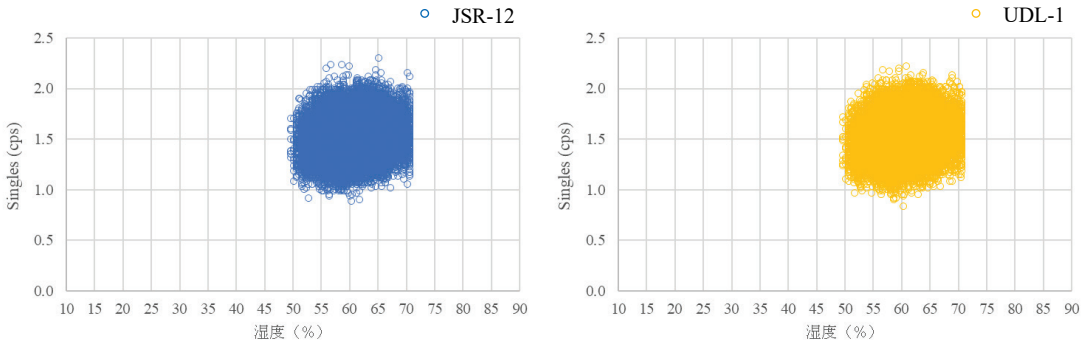

図 2.1.3-117　シングル値と湿度の相関（2024/8/24～2024/10/9）
（AFAS-P Bottom Fork 検出器）

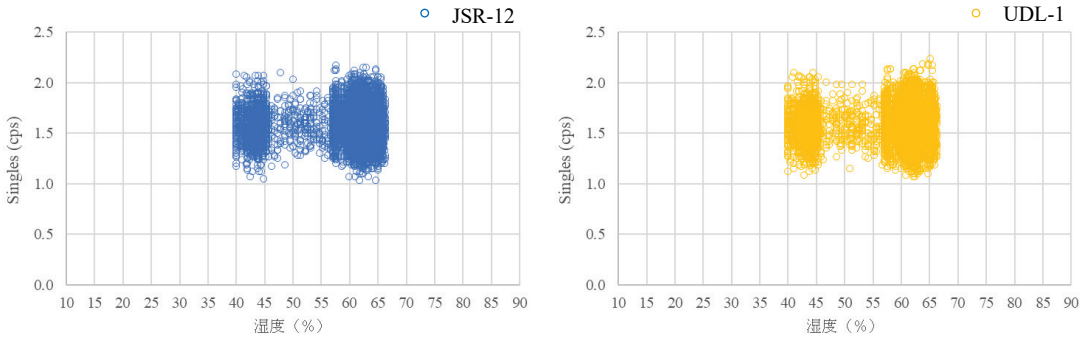

図 2.1.3-118　シングル値と湿度の相関（2024/10/11～2024/10/21）
（AFAS-P Bottom Fork 検出器）

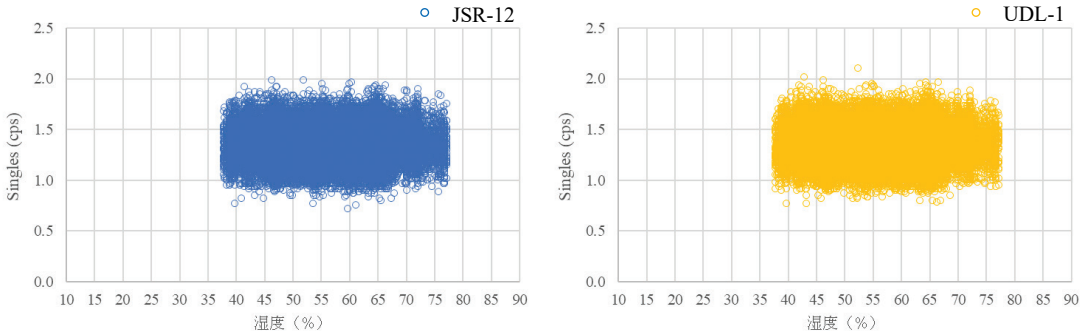

図 2.1.3-119　シングル値と湿度の相関（2024/10/24～2024/12/17）
（AFAS-P Bottom Fork 検出器）

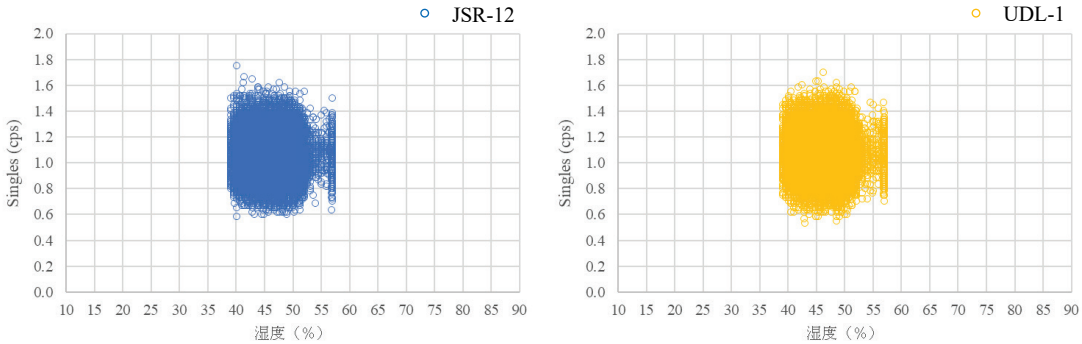

図 2.1.3-120　シングル値と湿度の相関（2024/12/17～2025/3/11）
（AFAS-P Bottom Fork 検出器）

（2）^{252}Cf 中性子線源測定

AFAS-B 及び AFAS-P において、2024 年 4 月から 2025 年 3 月までの間に月 1 回の頻度で ^{252}Cf 中性子線源の測定を行い、各月ごとに Fork 検出器においてはシングル値とその期待値、Collar 検出器においてはダブル値とその期待値の%Difference（図 2.1.3-121～126 に示す）を求めた。各グラフ中の赤色の実線は各%Difference の平均値を示し、破線は管理限界値（各%Difference の誤差の二乗平均平方根を 3 倍した値を%Difference の平均値に加算及び減算し求めた値）を示す。管理限界値の上限値 *UL* 及び下限値 *LL* を求める式を（2.1）及び（2.2）に示す。いずれの検出器においても各%Difference は、各管理限界値の範囲内となった。AFAS-P の各検出器については、UDL-1 による測定を合わせて行い、いずれも各管理限界値の範囲内となったが、AFAS-P の Collar 検出器においては、JSR-12 と比較して UDL-1 の%Difference が高くなる傾向がみられた。

また、各計数率の%Difference と温度及び湿度の相関の有無の確認結果を図 2.1.3-127～138 に示す。各測定において、温度は約 18℃～26℃、湿度は約 44%～64%の範囲で変動したが、これらの変動は計数率に影響を及ぼさなかった。

$$UL = \frac{1}{n}\sum_{i=1}^{n} \%Difference_i + 3 \times \sqrt{\frac{1}{n}\sum_{i=1}^{n} (\sigma\%Difference_i)^2} \quad \cdot\cdot\cdot (2.1)$$

$$LL = \frac{1}{n}\sum_{i=1}^{n} \%Difference_i - 3 \times \sqrt{\frac{1}{n}\sum_{i=1}^{n} (\sigma\%Difference_i)^2} \quad \cdot\cdot\cdot (2.2)$$

ただし、n は 2024 年 4 月から 2025 年 3 月までの間に月 1 回の頻度で測定した回数であり、

σ%Difference は計数率と期待値の%Difference の誤差である。（n = 1 は 2024 年 4 月のデータとする）

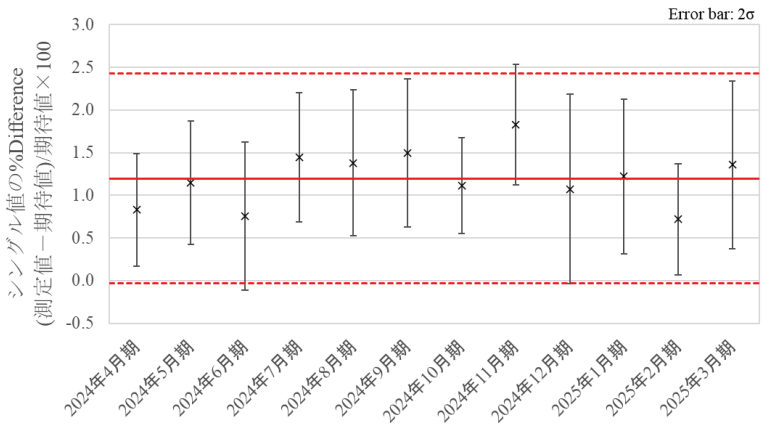

図 2.1.3-121　月ごとの%Difference の評価結果（2024 年 4 月～2025 年 3 月）
（AFAS-B Top Fork 検出器）

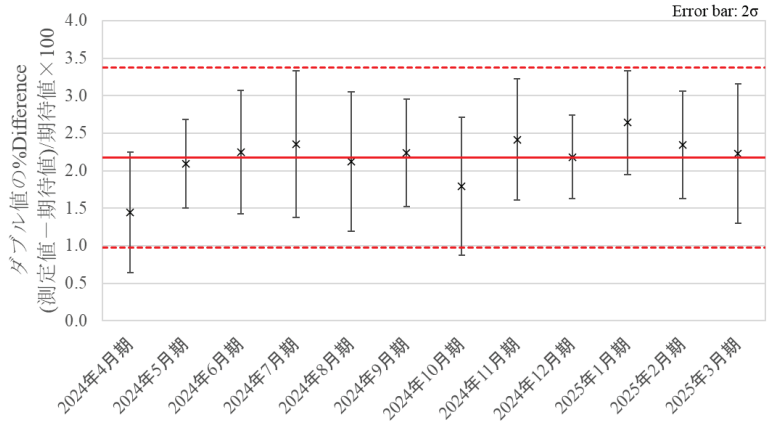

図 2.1.3-122　月ごとの%Difference の評価結果（2024 年 4 月～2025 年 3 月）
（AFAS-B Collar 検出器）

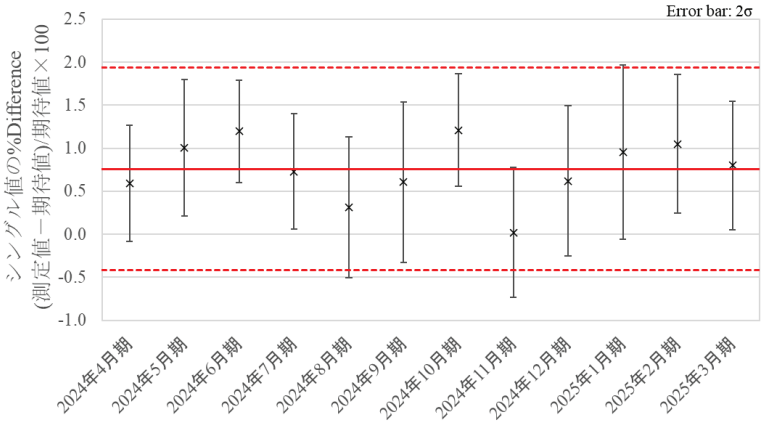

図 2.1.3-123　月ごとの%Difference の評価結果（2024 年 4 月～2025 年 3 月）
（AFAS-B Bottom Fork 検出器）

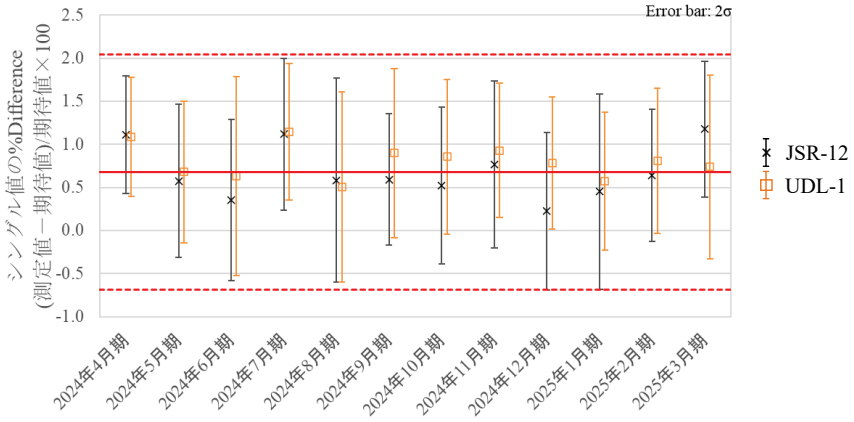

図 2.1.3-124　月ごとの%Difference の評価結果（2024 年 4 月～2025 年 3 月）
（AFAS-P Top Fork 検出器）

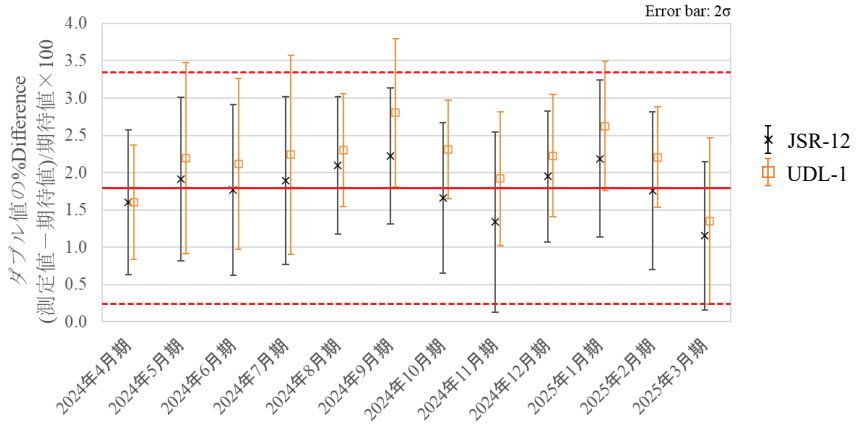

図 2.1.3-125　月ごとの%Difference の評価結果（2024 年 4 月～2025 年 3 月）
（AFAS-P Collar 検出器）

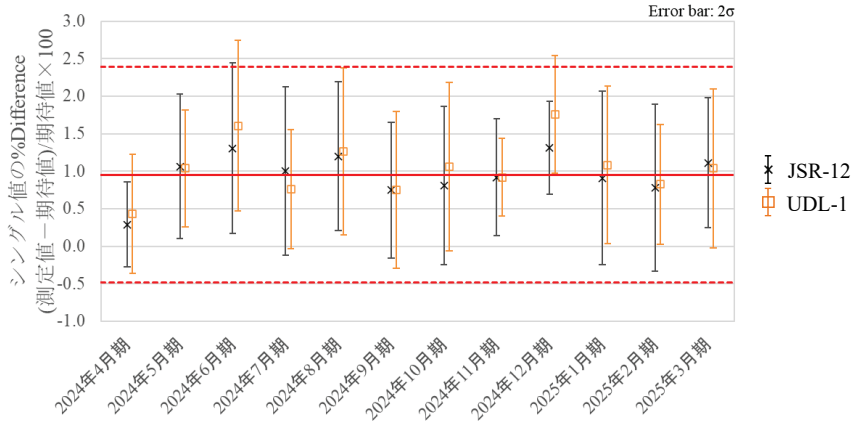

図 2.1.3-126　月ごとの%Difference の評価結果（2024 年 4 月～2025 年 3 月）
（AFAS-P Bottom Fork 検出器）

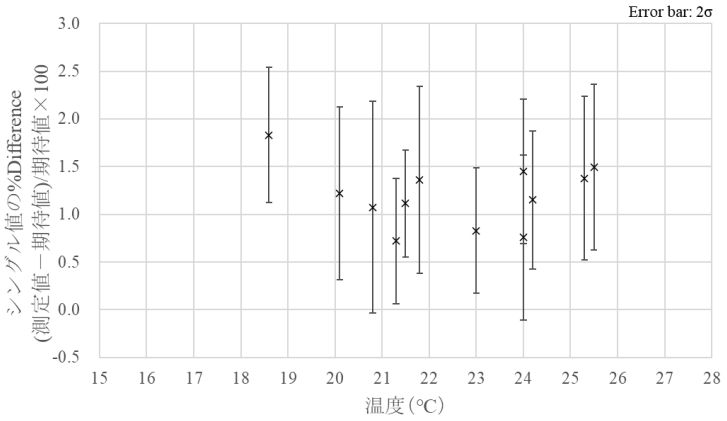

図 2.1.3-127　%Difference と温度の相関（2024 年 4 月～2025 年 3 月）
（AFAS-B Top Fork 検出器）

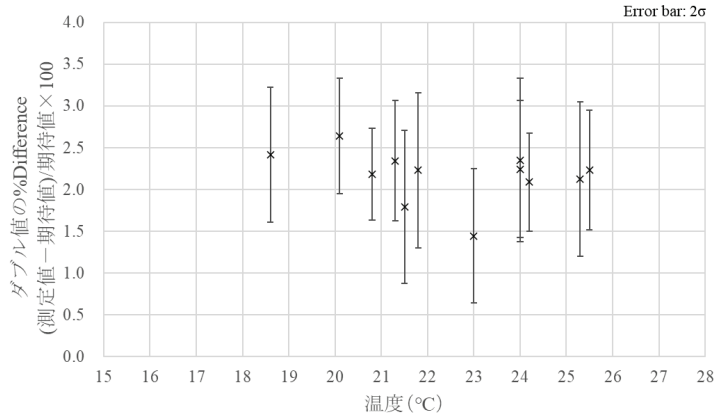

図 2.1.3-128　%Difference と温度の相関（2024 年 4 月～2025 年 3 月）
（AFAS-B Collar 検出器）

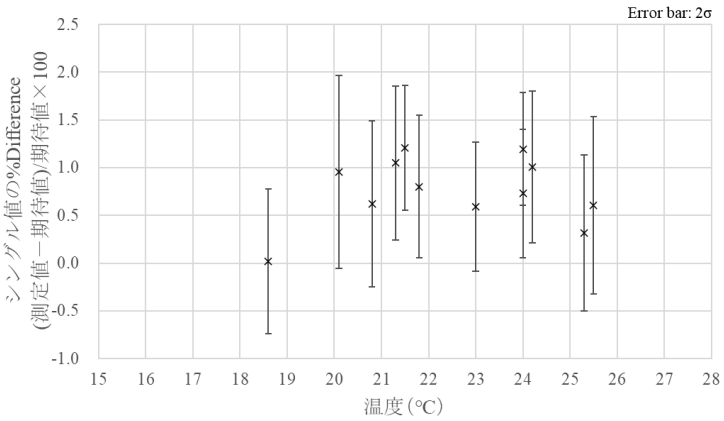

図 2.1.3-129　%Difference と温度の相関（2024 年 4 月～2025 年 3 月）
（AFAS-B Bottom Fork 検出器）

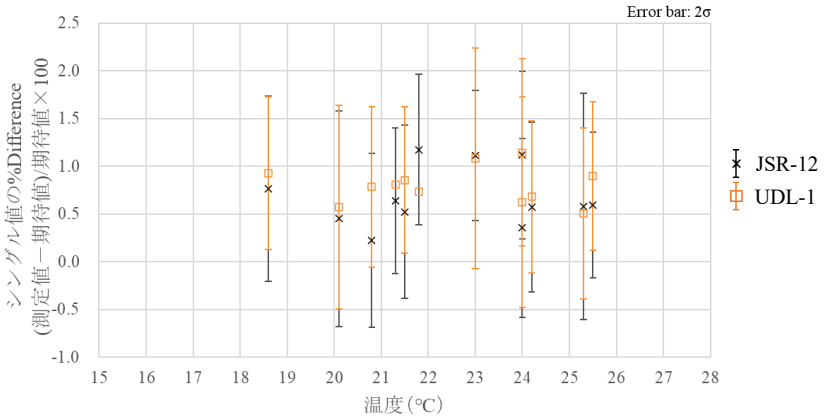

図 2.1.3-130　%Difference と温度の相関（2024 年 4 月～2025 年 3 月）
（AFAS-P Top Fork 検出器）

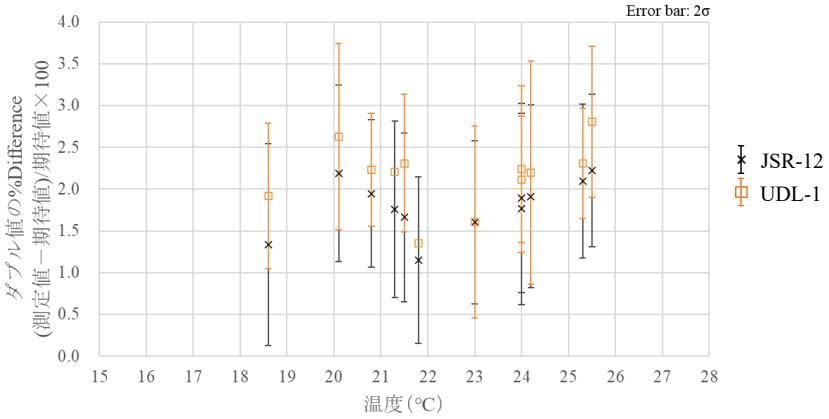

図 2.1.3-131　%Difference と温度の相関（2024 年 4 月～2025 年 3 月）
（AFAS-P Collar 検出器）

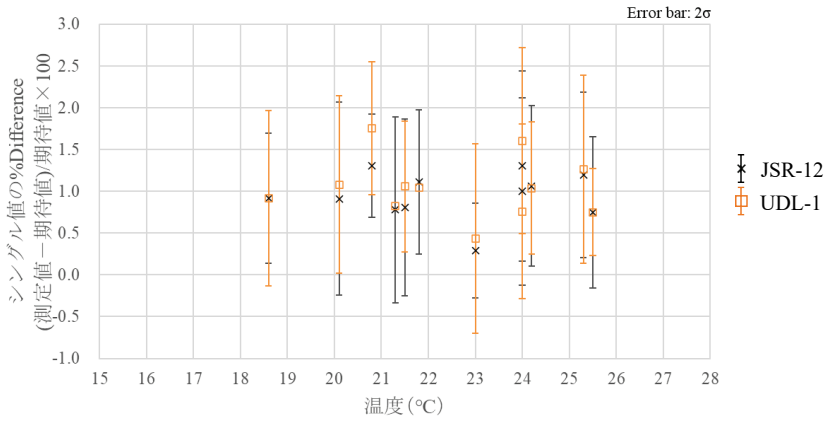

図 2.1.3-132　%Difference と温度の相関（2024 年 4 月～2025 年 3 月）
（AFAS-P Bottom Fork 検出器）

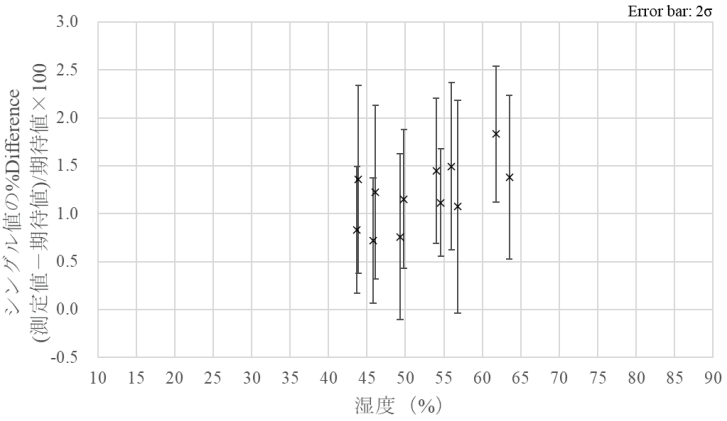

図 2.1.3-133　%Difference と湿度の相関（2024 年 4 月～2025 年 3 月）
（AFAS-B Top Fork 検出器）

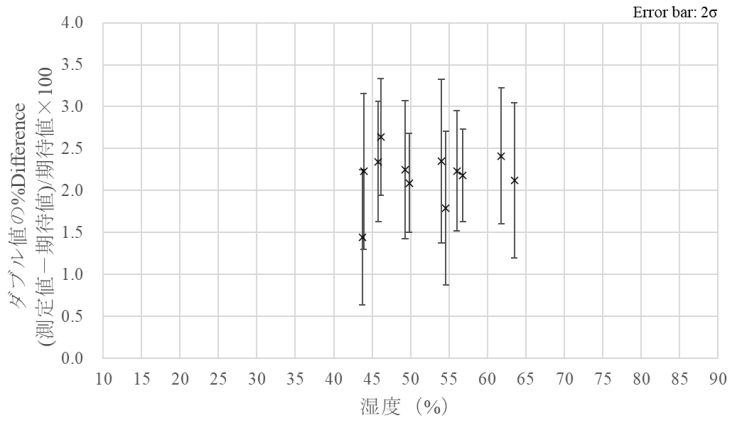

図 2.1.3-134　%Difference と湿度の相関（2024 年 4 月～2025 年 3 月）
（AFAS-B Collar 検出器）

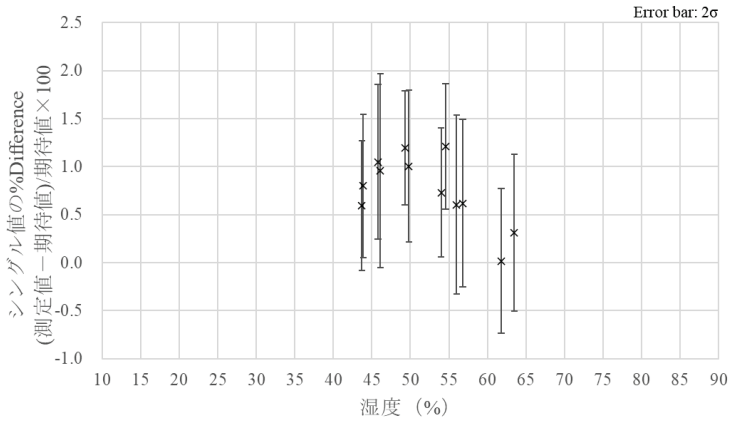

図 2.1.3-135　%Difference と湿度の相関（2024 年 4 月～2025 年 3 月）
（AFAS-B Bottom Fork 検出器）

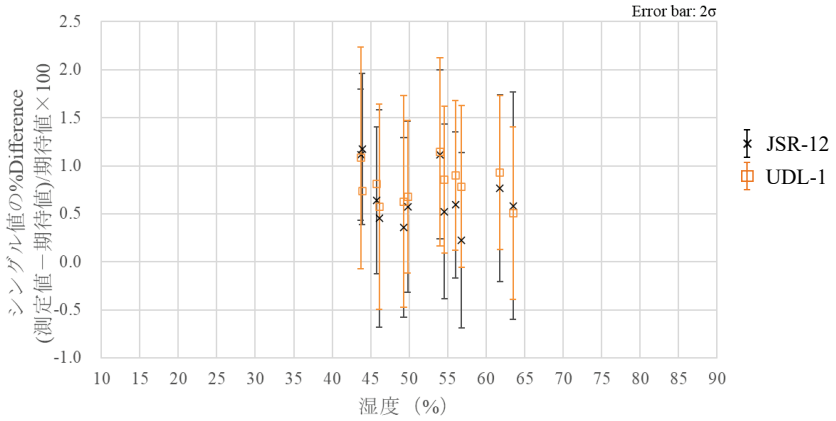

図 2.1.3-136　%Difference と湿度の相関（2024 年 4 月～2025 年 3 月）
（AFAS-P Top Fork 検出器）

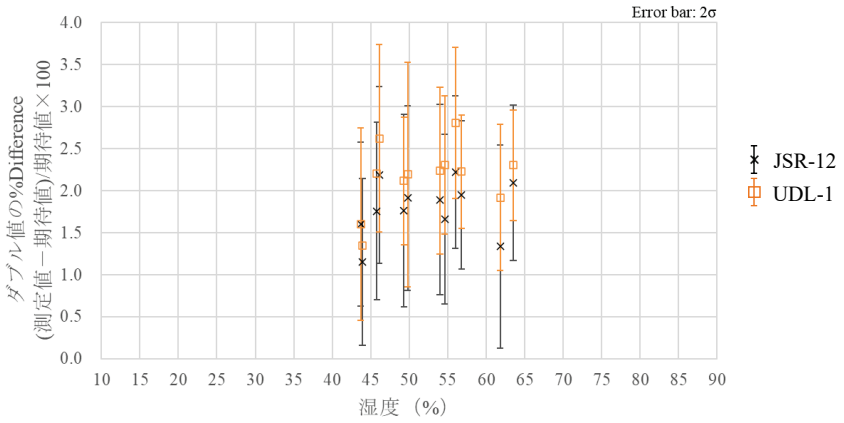

図 2.1.3-137　%Difference と湿度の相関（2024 年 4 月～2025 年 3 月）
（AFAS-P Collar 検出器）

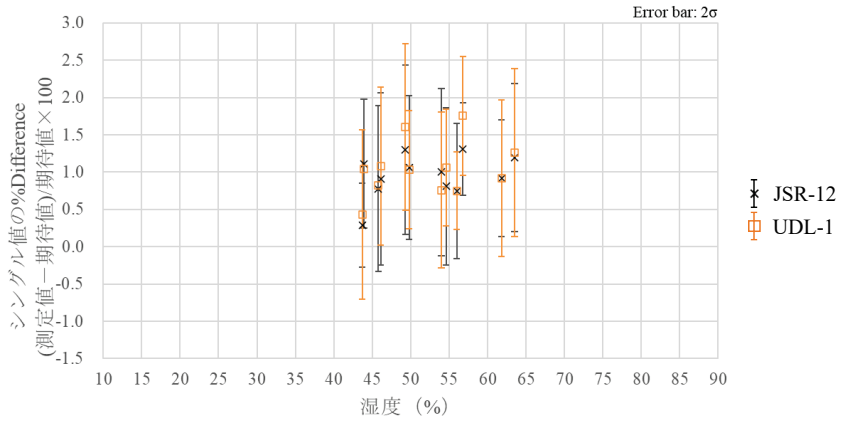

図 2.1.3-138　%Difference と湿度の相関（2024 年 4 月～2025 年 3 月）
（AFAS-P Bottom Fork 検出器）

2.1.4　考察

（1）バックグラウンド測定

AFAS-P の Collar 検出器においてみられた、単発的な高計数率が全期間に複数回測定される事象については、シングル値及びダブル値において同時に確認されており、他の検出器では確認されなかったため、宇宙線や環境の変化による影響ではないと考えられる。本事象については、前年度（令和 5 年度）以前の性能確認試験(参考文献 2)においても同様の事象が確認されており、検出器の不具合により発生している事象である可能性があるため、LANL に報告済みである。なお、本事象については、通常、INCC ソフトウェアの QC Test 機能により排除されるため、測定に影響を及ぼすことはない。

AFAS-B の Bottom Fork 検出器においてみられた、2024 年 6 月から 8 月にかけてシングル値が徐々に増加する事象については、8 月 23 日にデシカントを交換したことにより、図 2.1.3-92 に示すとおり、約 2 週間で 6 月以前のシングル値まで低下した。なお、デシカント交換時のインジケーターの指示値は、JAEA が定めるデシカントの交換基準を超過していた(*8)。また、図 2.1.4-1 に示すとおり、当該期間のシングル値と温度及び湿度に相関係数 0.6 程度の正の相関がみられた。以上のことから、本事象が発生した期間においては AFAS-B の Bottom Fork 検出器内部の湿度は高い状態にあり、測定環境の温度及び湿度の変動が測定に影響を及ぼしたと考えられる。

検出器内部の湿度が高い状態においては、検出器の種類に関わらず測定環境の温度及び湿度の変動が測定に影響を及ぼす可能性があるため、J-MOX においては AFAS 測定環境の温度及び湿度の変動範囲が当該測定と同等（温度 : 約 23℃～26℃、湿度 : 約 38%～72%）の場合には、検出器のデシカント交換を頻繁に行うことで測定に及ぼす影響を低減できると考えられる。

以上のように、いくつかの異常値が取得されたが、各検出器により得られたほぼ全てのシングル値は、誤差（3σ）の範囲内に収まっていた。このことから、測定期間中、各検出器は安定して動作していたと考えられる。

*8: 写真 2.1.4-1 に示すとおり、インジケーターには数字が印字されており、湿度が一定の値を超えると対応するエリアの色が青からピンクに変化する。本検出器は、2 か月に 1 回の頻度で行われた維持管理において、目視によりインジケーターの指示値を読み取り、JAEA が定めるデシカントの交換基準（インジケーターの指示値が 60%）を超過しているものについてはデシカントを未使用のものと交換した。なお、本事象が発生するまでに維持管理は 4 月 5 日、6 月 5 日及び 8 月 2 日に実施されたが、いずれもインジケーターの指示値が 40%以下であり、交換基準を超過していなかった。

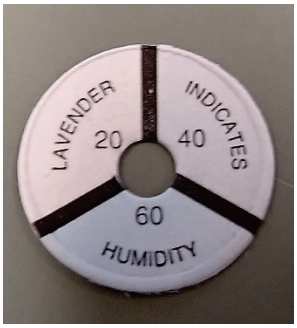

写真 2.1.4-1　検出器内の湿度確認用インジケーター（指示値が 40%の場合）

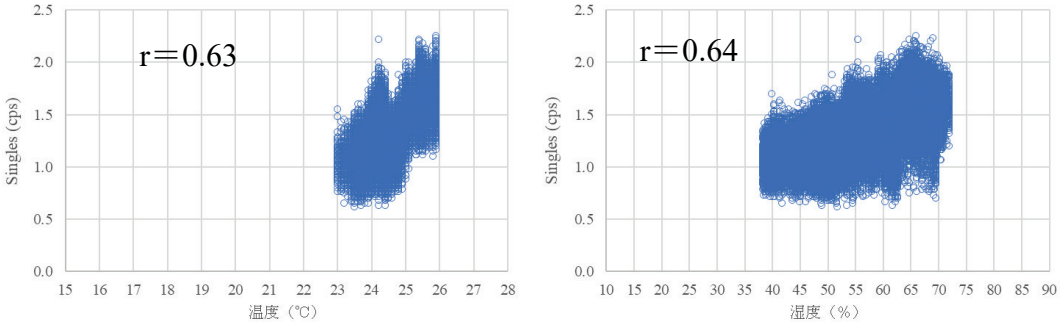

図 2.1.4-1　シングル値と温度及び湿度の相関（2024/4/5～2024/8/5）
（AFAS-B Bottom Fork 検出器）

（2）^{252}Cf 中性子線源測定

いずれの検出器においても、各月の計数率と期待値の%Difference は、管理限界値の範囲内となったことから、本期間において AFAS の性能は正常に維持されていたと考えられる。

また、AFAS-P の Collar 検出器においては、JSR-12 と比較して UDL-1 の測定結果から得られた%Difference が高くなる傾向がみられた。この原因は、表 2.1.4-1 に示すとおり、JSR-12 と比較してクロック周波数の高い UDL-1 ではパルス信号の数え落としが少なくなることでダブル値が高く計数されているためだと考えられる。

表 2.1.4-1　各計数装置のクロック周波数

計数装置	クロック周波数 (MHz)
JSR-12	4
UDL-1	100

2.2　パルス間隔分布の評価

2.2.1　目的

装置に不具合が発生した場合、その原因特定の判断材料となる、アンプ毎のパルス間隔分布を評価する。

2.2.2　方法

JAEA が所有するリストモジュール（PTR-32HV）を使用して ^{252}Cf 中性子線源を測定し、AFAS の各検出器のアンプ毎のパルス間隔分布を評価する。また、本評価結果と前年度（令和 5 年度）に実施した性能確認試験(参考文献 2)における評価結果を比較する。令和 5 年度及び令和 6 年度の評価結果の例を図 2.2.2-1 に示す。

本評価は、AFAS-B 及び AFAS-P の各検出器について行う。

各検出器のアンプ数及び配置図を表 2.2.2-1 及び図 2.2.2-2～2.2.2-5 に示す。

本評価では、1.6 項の表 1.6-1 に示した ^{252}Cf 中性子線源（T1-349）を使用する。

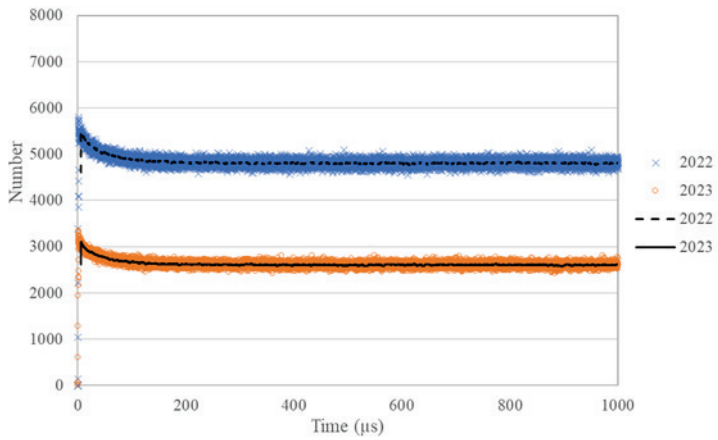

図 2.2.2-1　アンプ A のパルス間隔分布の例（AFAS-B Collar 検出器）

表 2.2.2-1　各検出器におけるアンプ数

検出器		アンプ個数
AFAS-B	Top Fork	1
	Collar	6
	Bottom Fork	1
AFAS-P	Top Fork	1
	Collar	10
	Bottom Fork	1

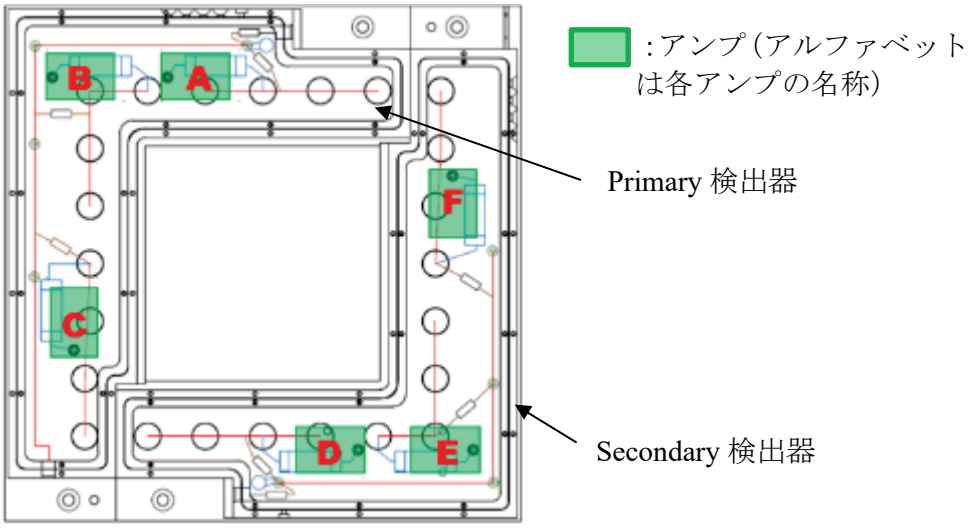

図 2.2.2-2　AFAS-B Collar 検出器のアンプ配置図

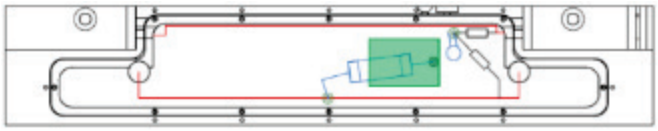

図 2.2.2-3　AFAS-B Top Fork 及び Bottom Fork 検出器のアンプ配置図

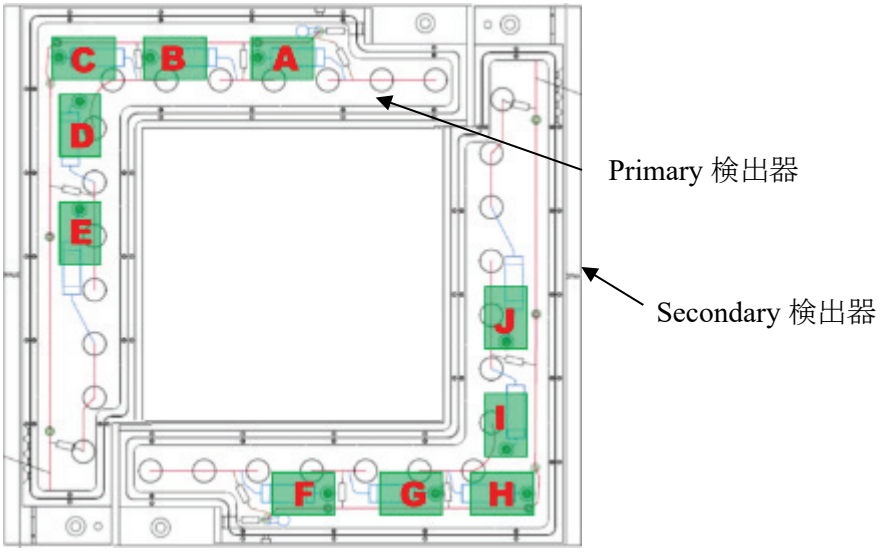

図 2.2.2-4　AFAS-P Collar 検出器のアンプ配置図

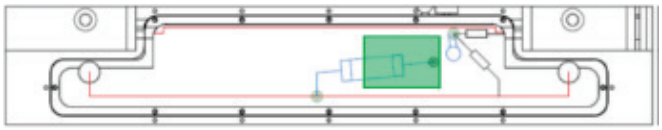

図 2.2.2-5　AFAS-P Top Fork 及び Bottom Fork 検出器のアンプ配置図

詳細な試験手順を以下に示す。

① AFAS の各検出器を試験用架台に設置する。
② 線源固定治具を使用して、^{252}Cf 中性子線源を任意の検出器にセットする。
③ 検出器にリストモジュールを接続する。
④ 検出器のジャンクションボックスの蓋を外す。
⑤ 任意のアンプ以外のアンプのジャンパーピン（写真 2.2.2-1 参照）を取り外し、計数機能を停止させる。
⑥ リストモジュール用ソフトウェアを使用してパルスを測定し、パルス間隔分布を評価する。
・AFAS-B 測定時間：Collar 検出器：10 分、Fork 検出器：100 分
・AFAS-P 測定時間：Collar 検出器：10 分、Fork 検出器：100 分
⑦ 全てのアンプについて、⑤～⑥を実施する。
⑧ 全ての検出器について、②～⑦を実施する。

ジャンパーピン

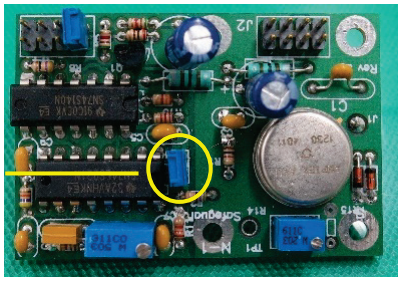

写真 2.2.2-1　AFAS のアンプ（AMPTEK A111）

2.2.3　結果

AFAS-B Collar 検出器における各アンプのパルス間隔分布を評価した。本評価結果と令和 5 年度（2023 年度）に実施した性能確認試験(参考文献 2)における評価結果を比較した結果（0～1000μs 及び 0～100μs の分布）を図 2.2.3-1～2.2.3-12 に示す。各グラフ中の×印及び破線は令和 5 年度（2023 年度）に評価したパルス間隔分布及びその移動平均線を示し、○印及び実線は令和 6 年度（2024 年度）に評価したパルス間隔分布及びその移動平均線を示す。

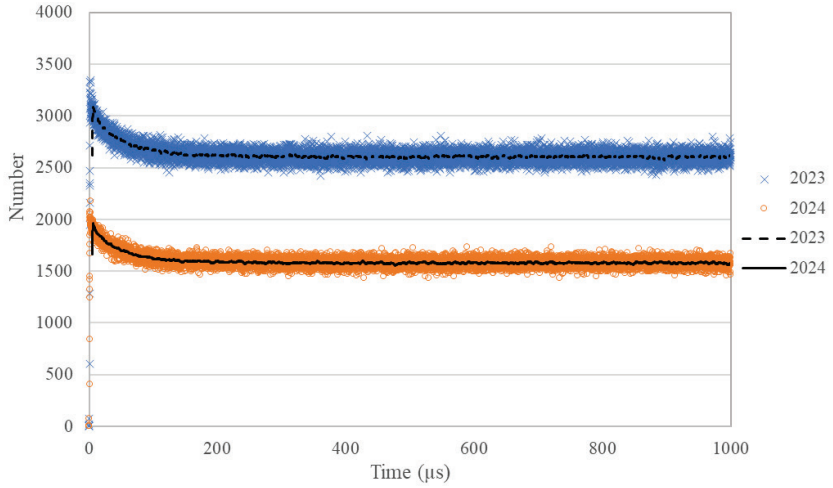

図 2.2.3-1　AFAS-B Collar 検出器 アンプ A のパルス間隔分布の比較（0～1000μs）

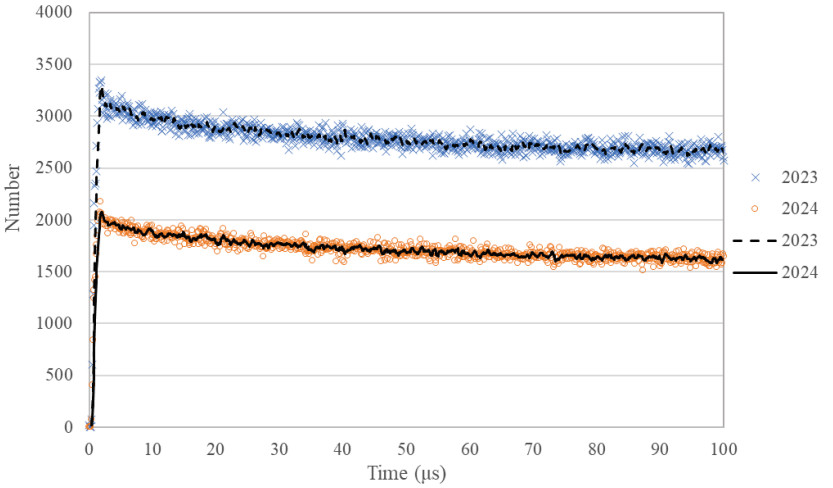

図 2.2.3-2　AFAS-B Collar 検出器 アンプ A のパルス間隔分布の比較（0～100μs）

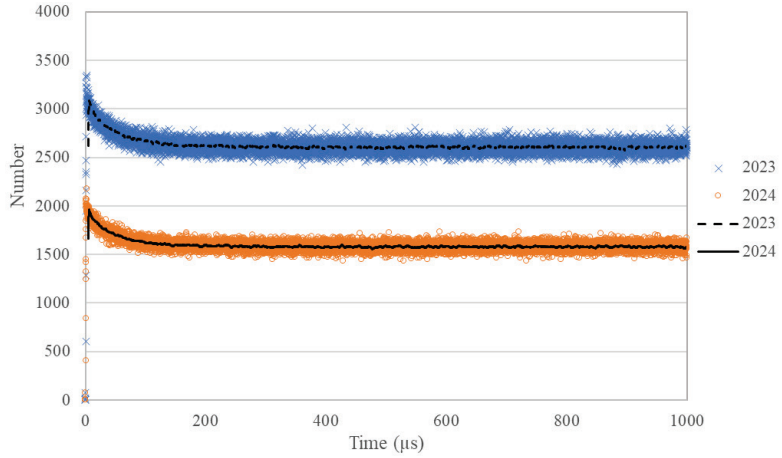

図 2.2.3-3　AFAS-B Collar 検出器 アンプ B のパルス間隔分布の比較（0～1000μs）

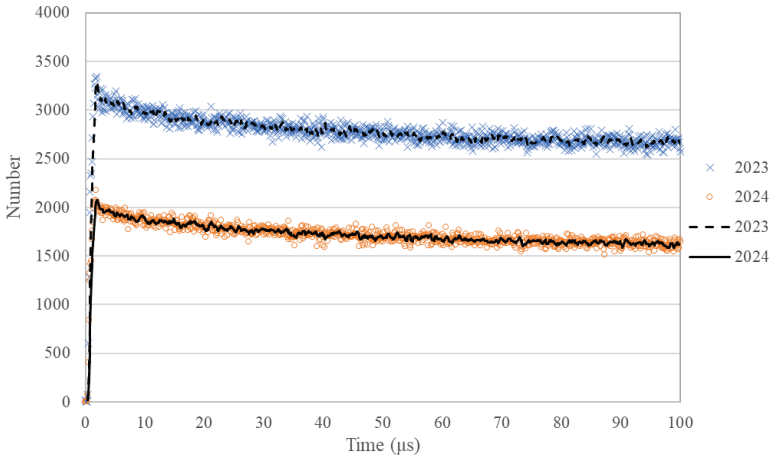

図 2.2.3-4　AFAS-B Collar 検出器 アンプ B のパルス間隔分布の比較（0～100μs）

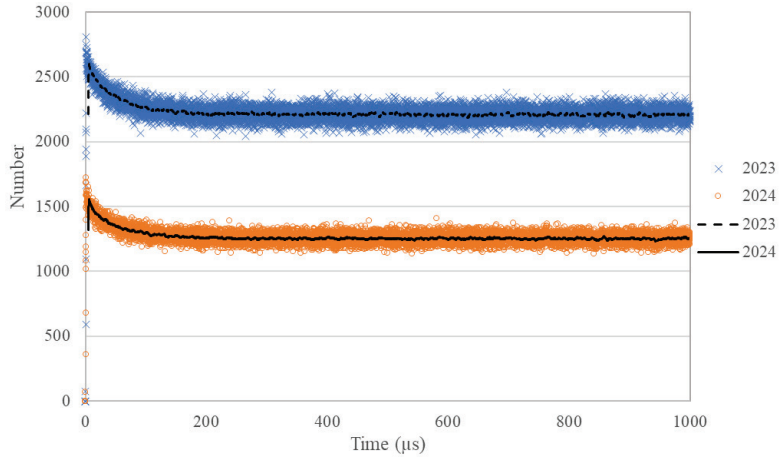

図 2.2.3-5　AFAS-B Collar 検出器 アンプ C のパルス間隔分布の比較（0～1000μs）

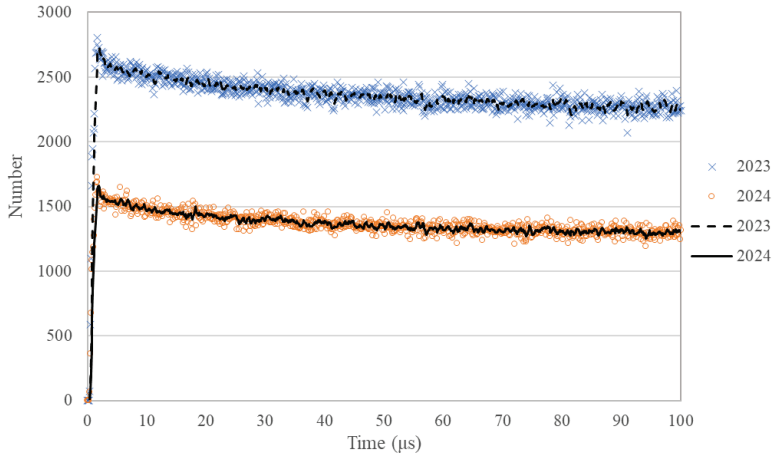

図 2.2.3-6　AFAS-B Collar 検出器 アンプ C のパルス間隔分布の比較（0～100μs）

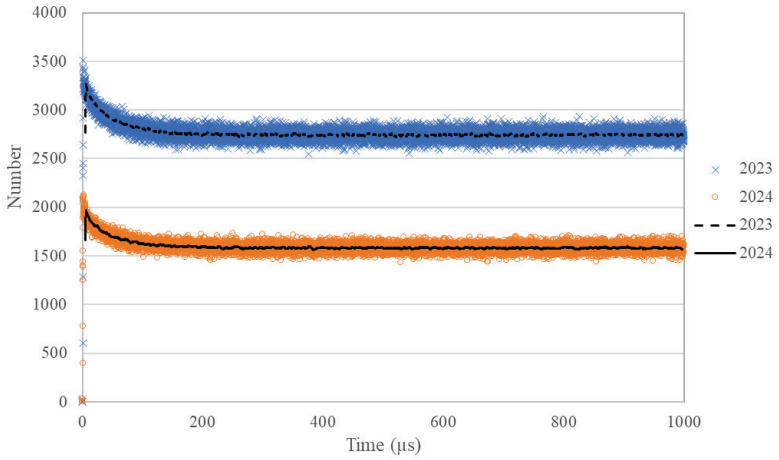

図 2.2.3-7　AFAS-B Collar 検出器 アンプ D のパルス間隔分布の比較（0～1000μs）

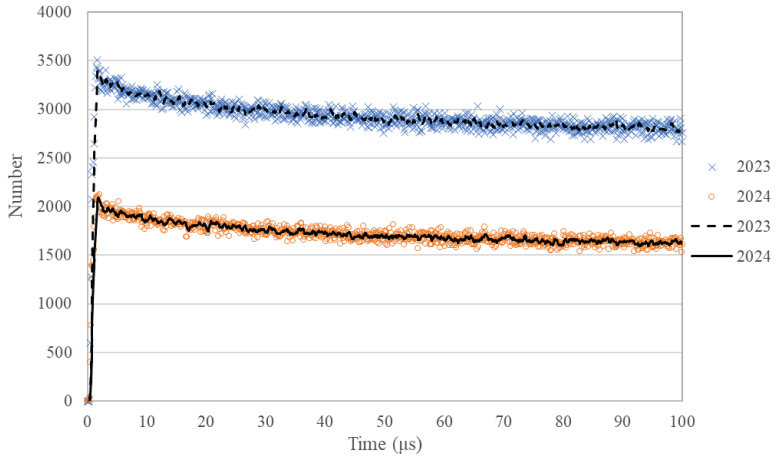

図 2.2.3-8　AFAS-B Collar 検出器 アンプ D のパルス間隔分布の比較（0～100μs）

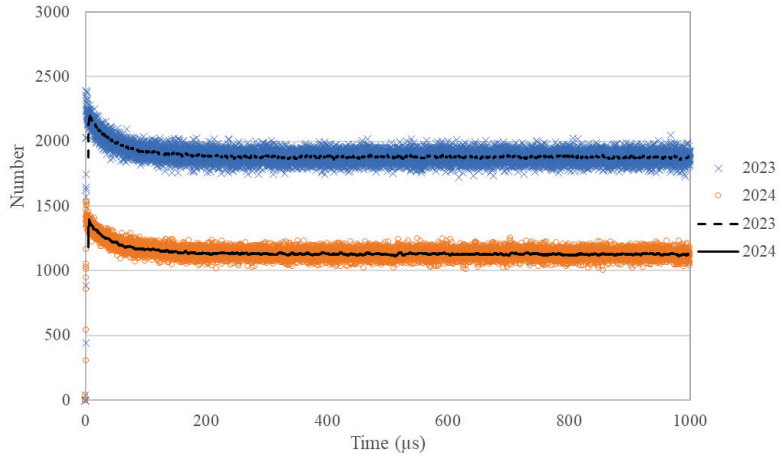

図 2.2.3-9　AFAS-B Collar 検出器 アンプ E のパルス間隔分布の比較（0～1000μs）

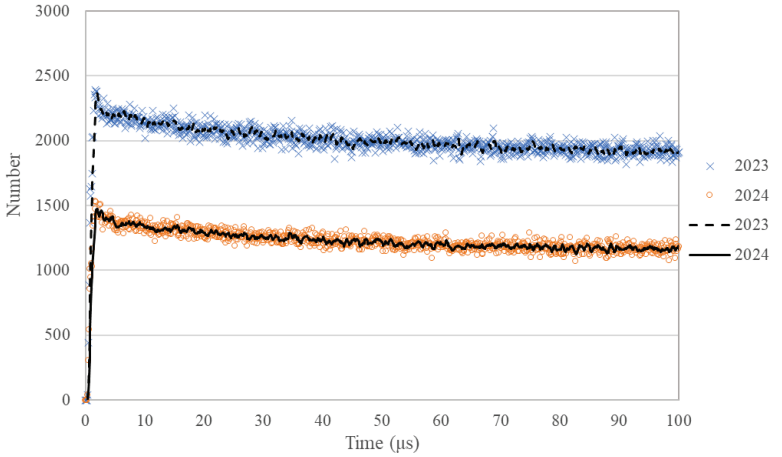

図 2.2.3-10　AFAS-B Collar 検出器 アンプ E のパルス間隔分布の比較（0～100μs）

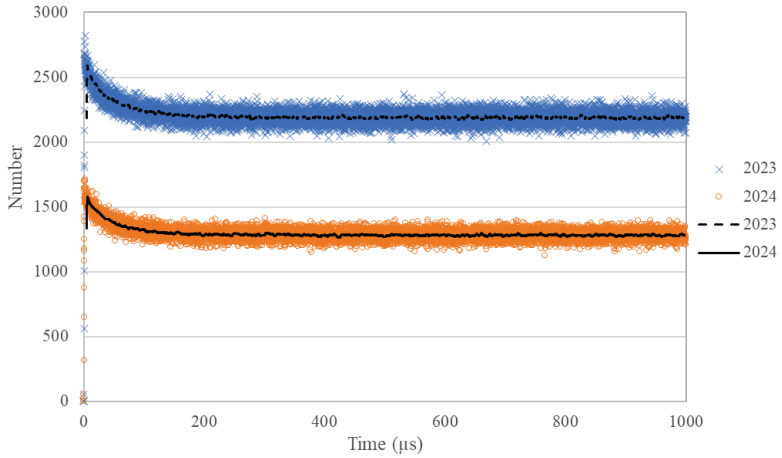

図 2.2.3-11　AFAS-B Collar 検出器 アンプ F のパルス間隔分布の比較（0～1000μs）

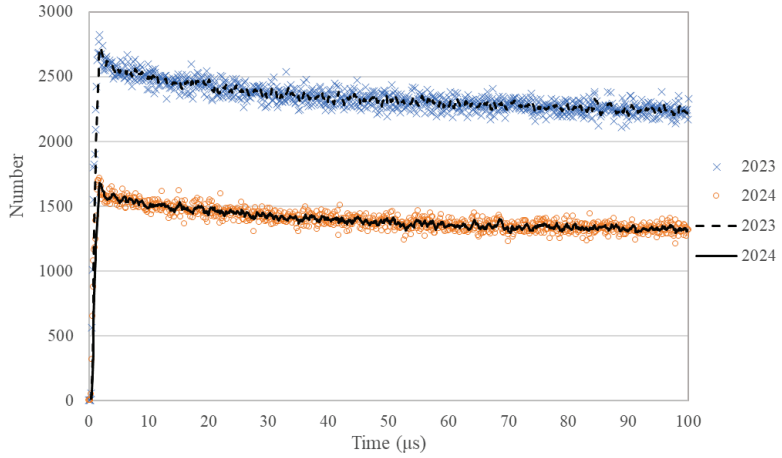

図 2.2.3-12　AFAS-B Collar 検出器 アンプ F のパルス間隔分布の比較（0～100μs）

AFAS-B Top Fork 検出器におけるアンプのパルス間隔分布を評価した。本評価結果と令和 5 年度（2023 年度）に実施した性能確認試験(参考文献 2)における評価結果を比較した結果（0～1000μs 及び 0～100μs の分布）を図 2.2.3-13 及び図 2.2.3-14 に示す。各グラフ中の×印及び破線は令和 5 年度（2023 年度）に評価したパルス間隔分布及びその移動平均線を示し、○印及び実線は令和 6 年度（2024 年度）に評価したパルス間隔分布及びその移動平均線を示す。

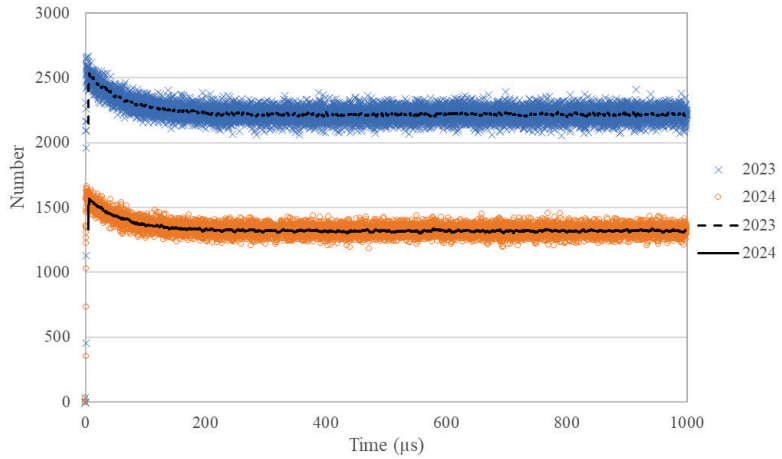

図 2.2.3-13　AFAS-B Top Fork 検出器 パルス間隔分布の比較（0～1000μs）

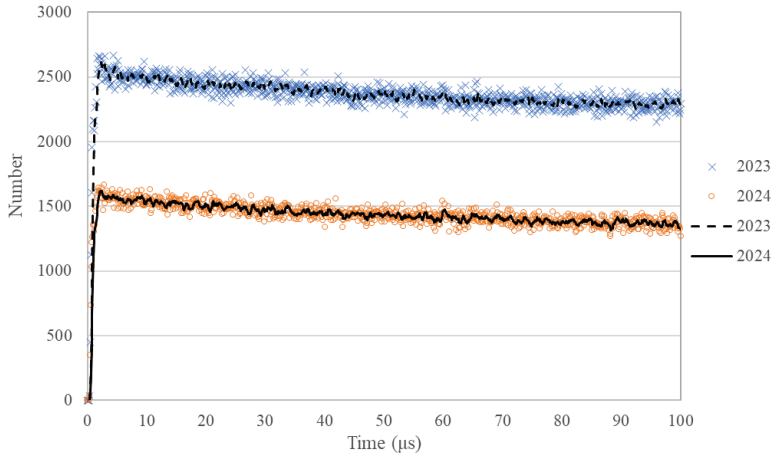

図 2.2.3-14　AFAS-B Top Fork 検出器 パルス間隔分布の比較（0～100μs）

AFAS-B Bottom Fork 検出器におけるアンプのパルス間隔分布を評価した。本評価結果と令和 5 年度（2023 年度）に実施した性能確認試験(参考文献 2)における評価結果を比較した結果（0～1000μs 及び 0～100μs の分布）を図 2.2.3-15 及び図 2.2.3-16 に示す。各グラフ中の×印及び破線は令和 5 年度（2023 年度）に評価したパルス間隔分布及びその移動平均線を示し、○印及び実線は令和 6 年度（2024 年度）に評価したパルス間隔分布及びその移動平均線を示す。

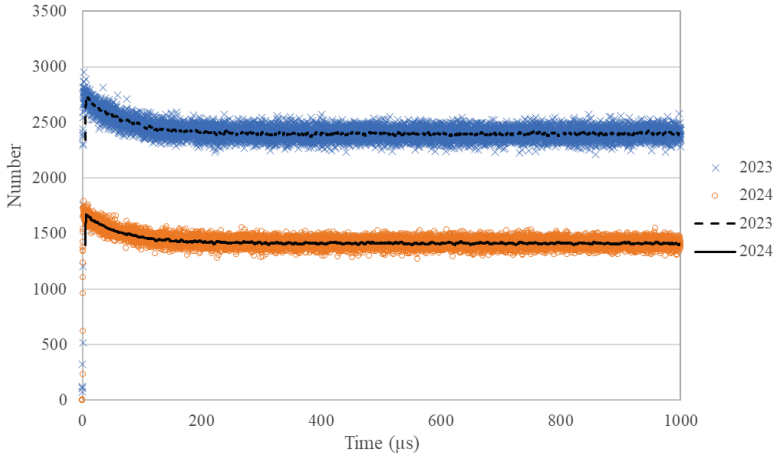

図 2.2.3-15　AFAS-B Bottom Fork 検出器のパルス間隔分布の比較（0～1000μs）

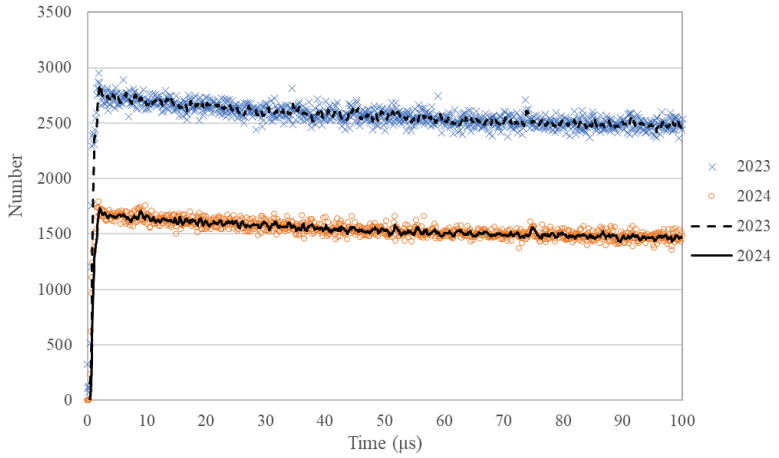

図 2.2.3-16　AFAS-B Bottom Fork 検出器のパルス間隔分布の比較（0～100μs）

AFAS-P Collar 検出器における各アンプのパルス間隔分布を評価した。本評価結果と令和 5 年度（2023 年度）に実施した性能確認試験(参考文献 2)における評価結果を比較した結果（0～1000μs 及び 0～100μs の分布）を図 2.2.3-17～2.2.3-36 に示す。各グラフ中の×印及び破線は令和 5 年度（2023 年度）に評価したパルス間隔分布及びその移動平均線を示し、○印及び実線は令和 6 年度（2024 年度）に評価したパルス間隔分布及びその移動平均線を示す。

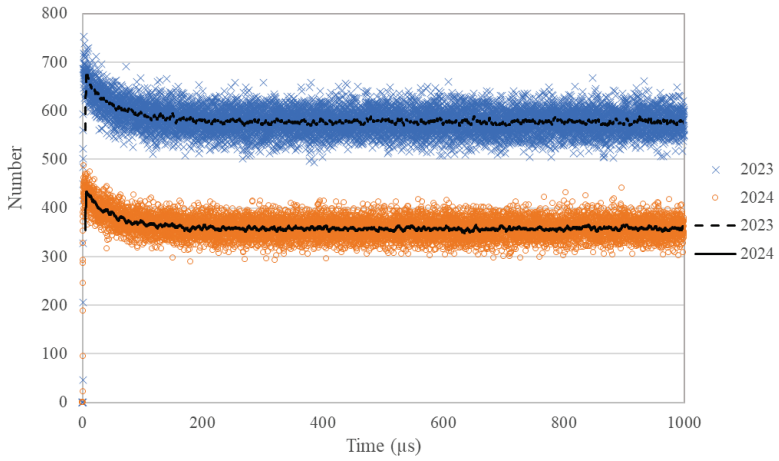

図 2.2.3-17　AFAS-P Collar 検出器 アンプ A のパルス間隔分布の比較（0～1000μs）

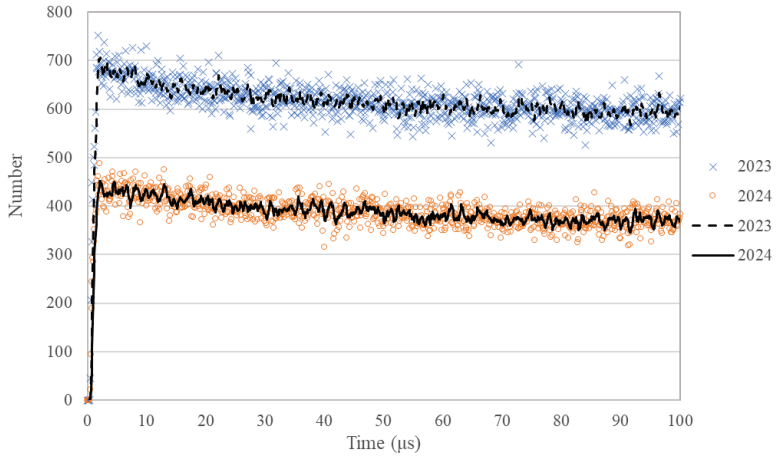

図 2.2.3-18　AFAS-P Collar 検出器 アンプ A のパルス間隔分布の比較（0～100μs）

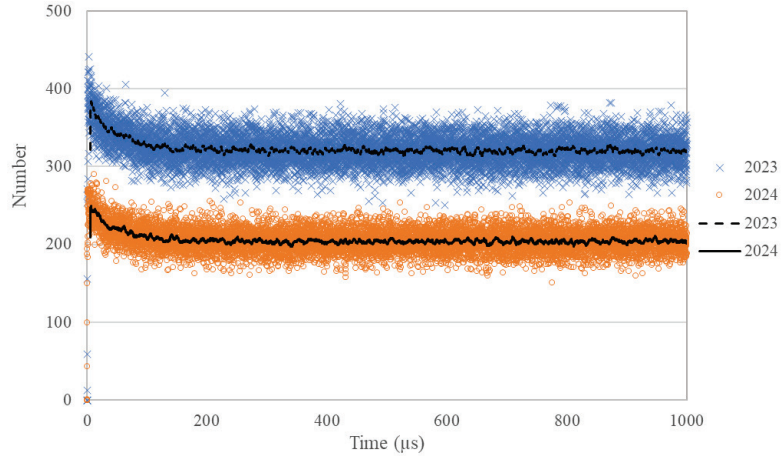

図 2.2.3-19　AFAS-P Collar 検出器 アンプ B のパルス間隔分布の比較（0～1000μs）

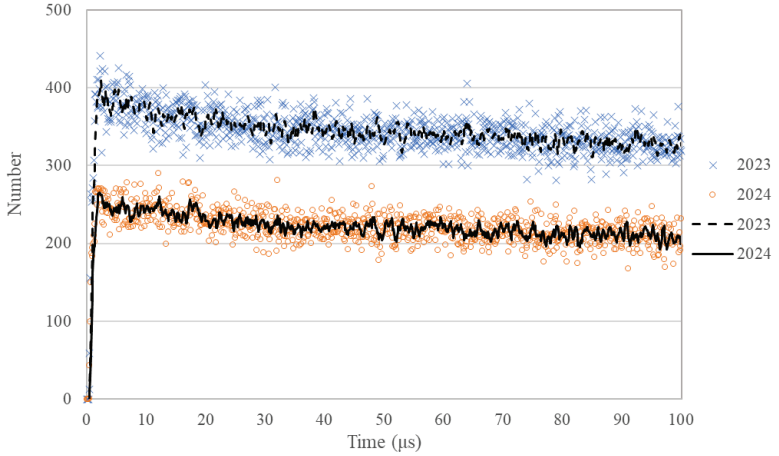

図 2.2.3-20　AFAS-P Collar 検出器 アンプ B のパルス間隔分布の比較（0～100μs）

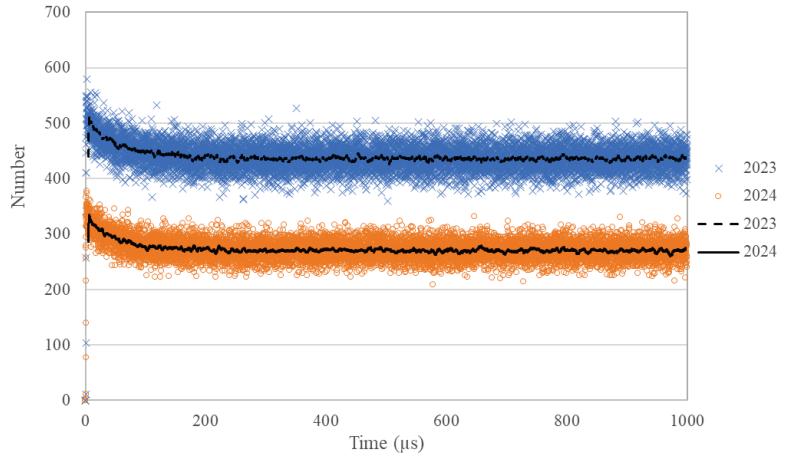

図 2.2.3-21　AFAS-P Collar 検出器 アンプ C のパルス間隔分布の比較（0～1000μs）

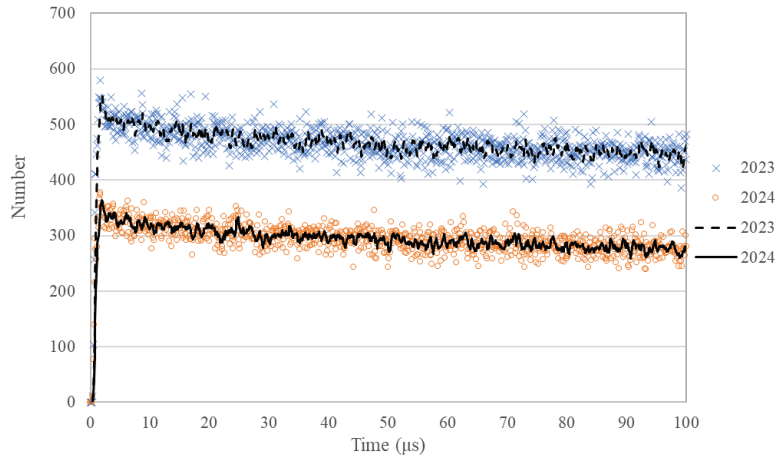

図 2.2.3-22　AFAS-P Collar 検出器 アンプ C のパルス間隔分布の比較（0～100μs）

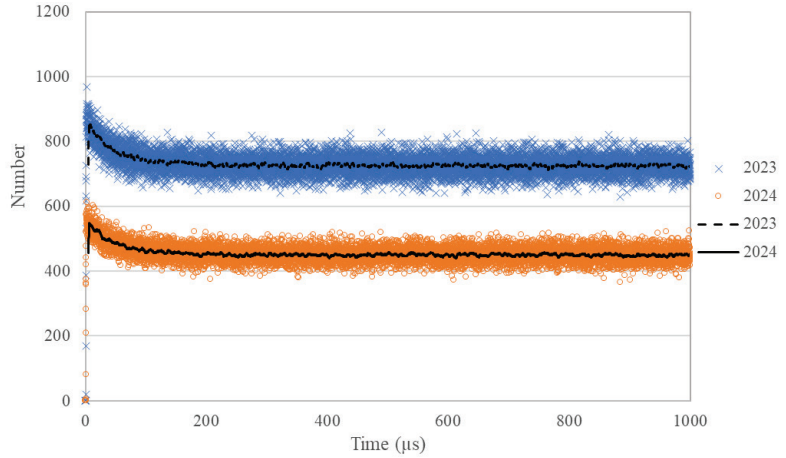

図 2.2.3-23　AFAS-P Collar 検出器 アンプ D のパルス間隔分布の比較（0～1000μs）

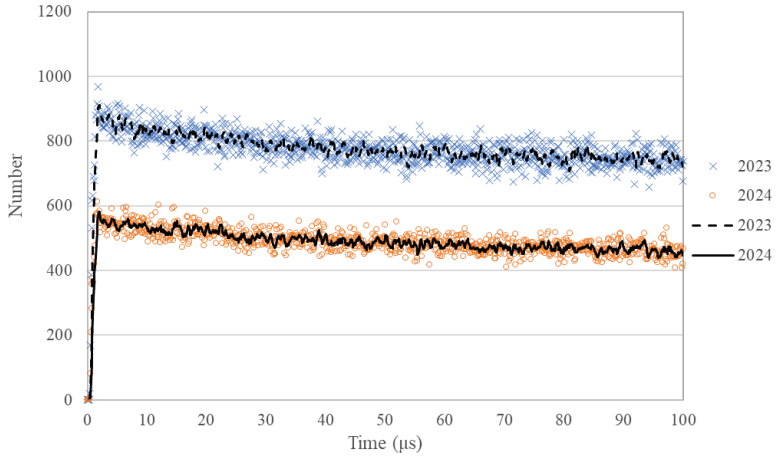

図 2.2.3-24　AFAS-P Collar 検出器 アンプ D のパルス間隔分布の比較（0～100μs）

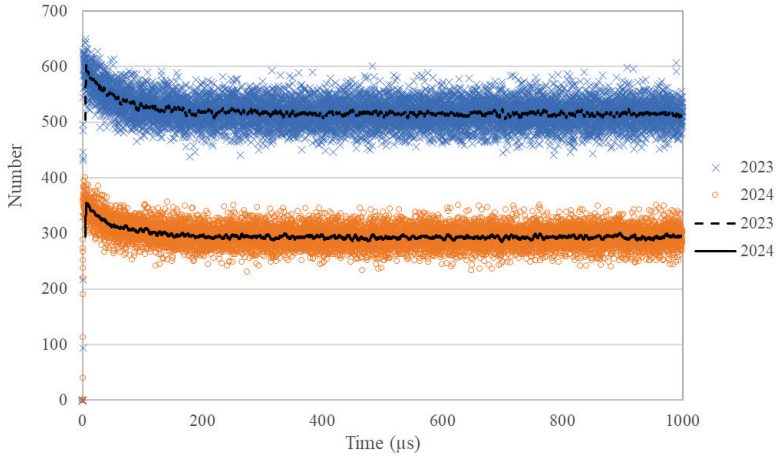

図 2.2.3-25　AFAS-P Collar 検出器 アンプ E のパルス間隔分布の比較（0～1000μs）

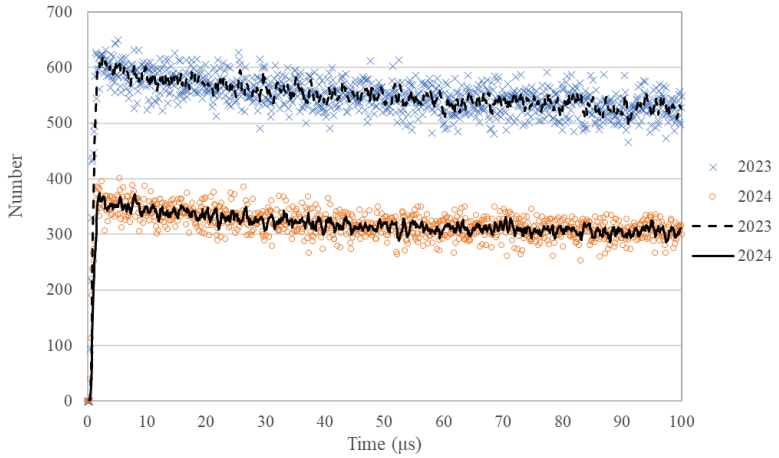

図 2.2.3-26　AFAS-P Collar 検出器 アンプ E のパルス間隔分布の比較（0～100μs）

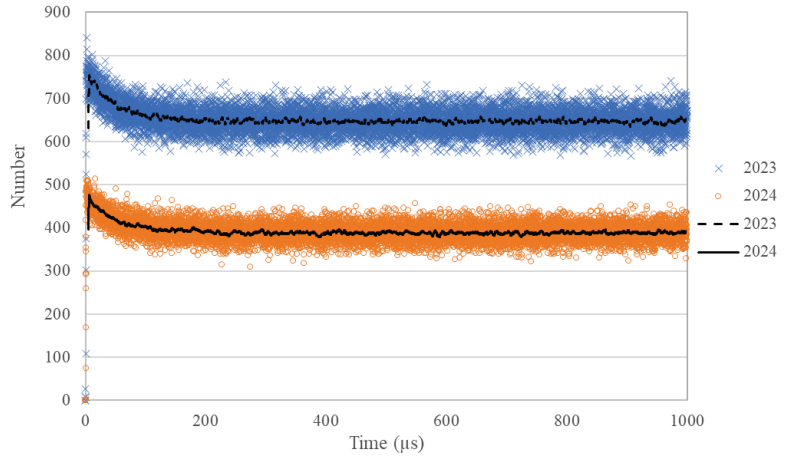

図 2.2.3-27　AFAS-P Collar 検出器 アンプ F のパルス間隔分布の比較（0～1000μs）

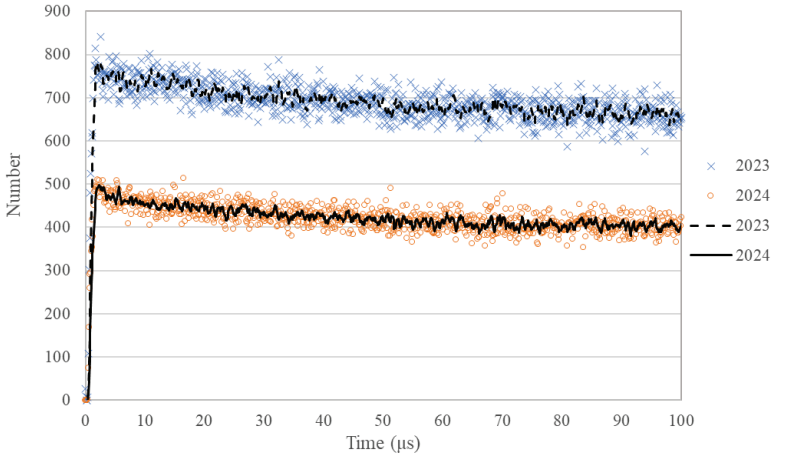

図 2.2.3-28　AFAS-P Collar 検出器 アンプ F のパルス間隔分布の比較（0～100μs）

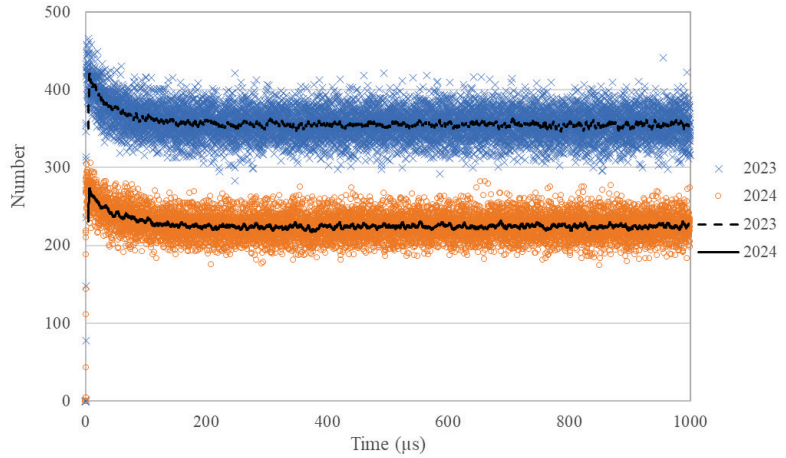

図 2.2.3-29　AFAS-P Collar 検出器 アンプ G のパルス間隔分布の比較（0～1000μs）

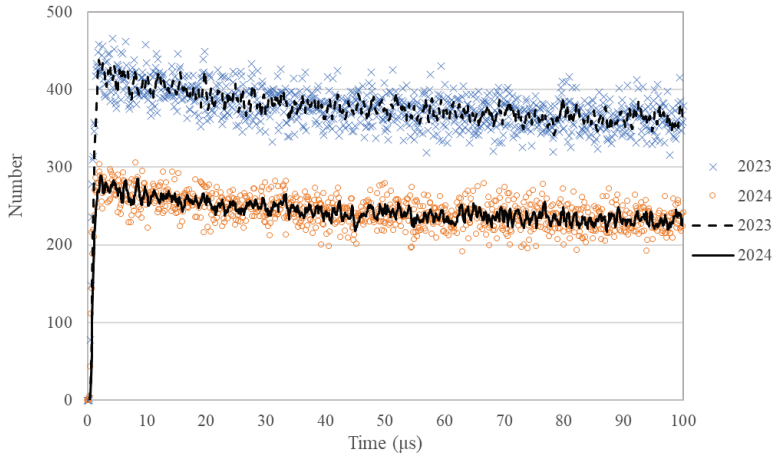

図 2.2.3-30　AFAS-P Collar 検出器 アンプ G のパルス間隔分布の比較（0～100μs）

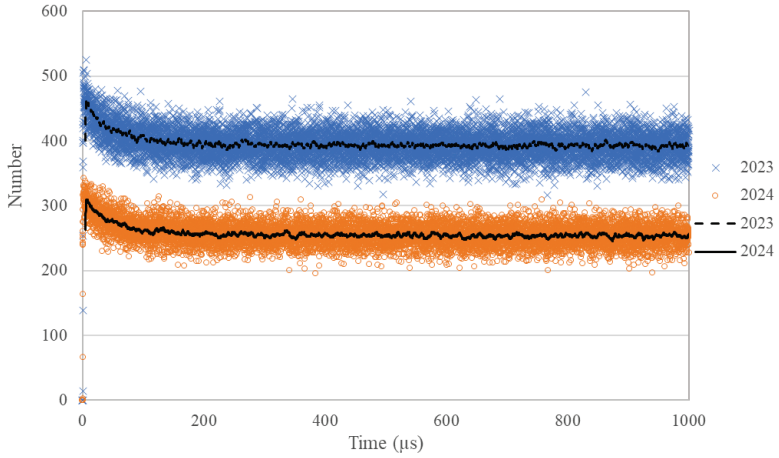

図 2.2.3-31　AFAS-P Collar 検出器 アンプ H のパルス間隔分布の比較（0～1000μs）

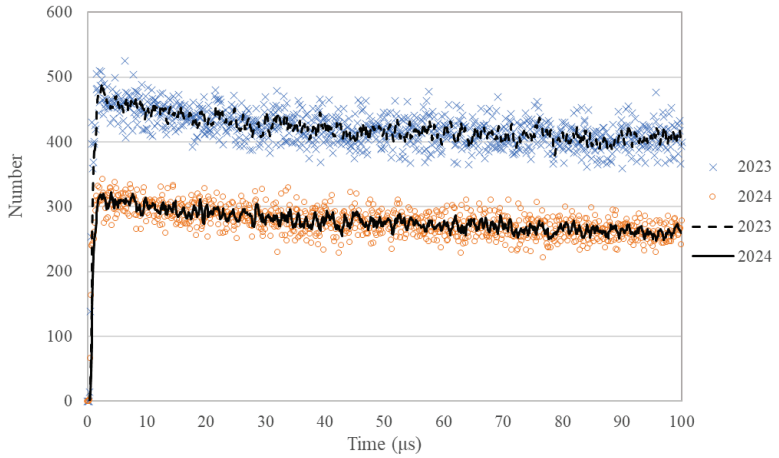

図 2.2.3-32　AFAS-P Collar 検出器 アンプ H のパルス間隔分布の比較（0～100μs）

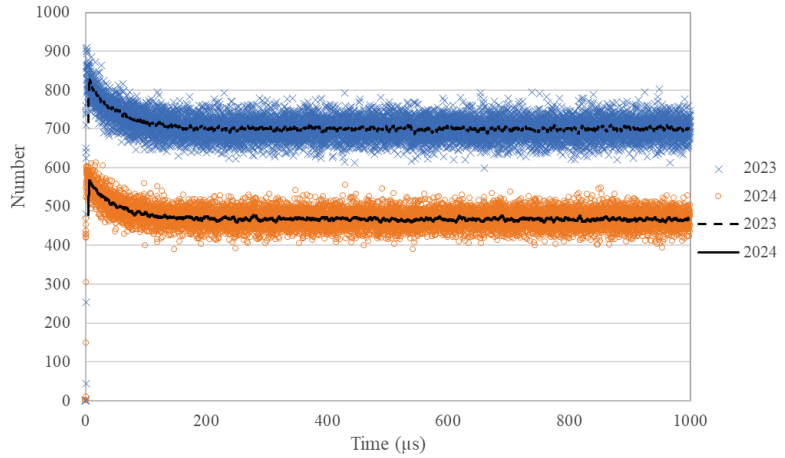

図 2.2.3-33　AFAS-P Collar 検出器 アンプ I のパルス間隔分布の比較（0～1000μs）

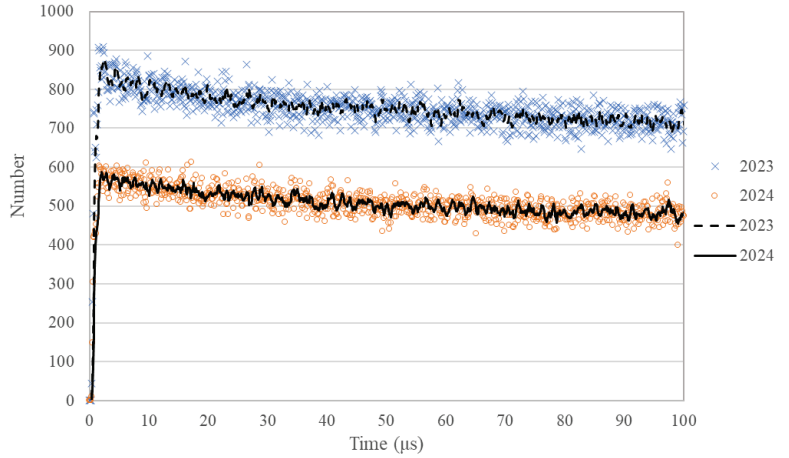

図 2.2.3-34　AFAS-P Collar 検出器 アンプ I のパルス間隔分布の比較（0～100μs）

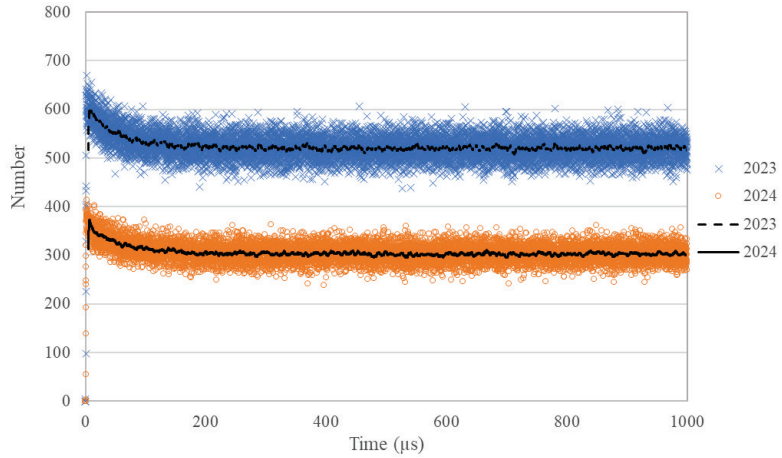

図 2.2.3-35　AFAS-P Collar 検出器 アンプ J のパルス間隔分布の比較（0～1000μs）

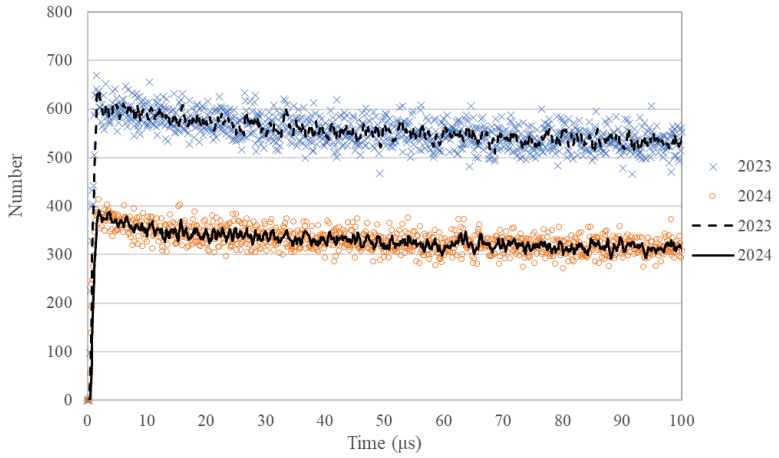

図 2.2.3-36　AFAS-P Collar 検出器 アンプ J のパルス間隔分布の比較（0～100μs）

AFAS-P Top Fork 検出器におけるアンプのパルス間隔分布を評価した。本評価結果と令和 5 年度（2023 年度）に実施した性能確認試験(参考文献 2)における評価結果を比較した結果（0～1000μs 及び 0～100μs の分布）を図 2.2.3-37 及び図 2.2.3-38 に示す。各グラフ中の×印及び破線は令和 5 年度（2023 年度）に評価したパルス間隔分布及びその移動平均線を示し、○印及び実線は令和 6 年度（2024 年度）に評価したパルス間隔分布及びその移動平均線を示す。

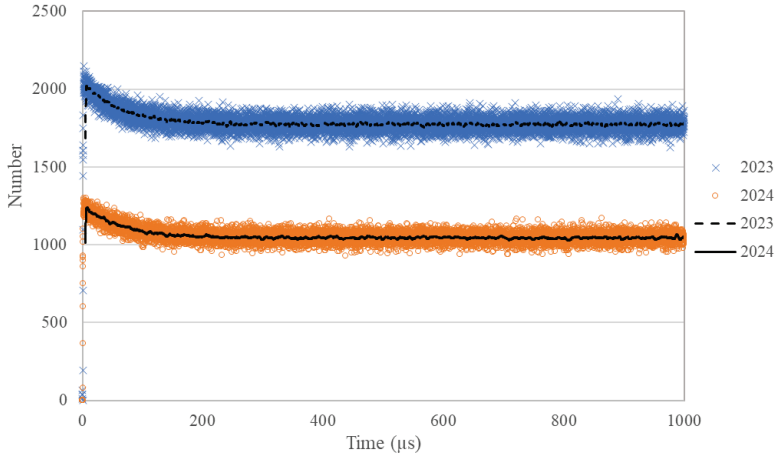

図 2.2.3-37　AFAS-P Top Fork 検出器のパルス間隔分布の比較（0～1000μs）

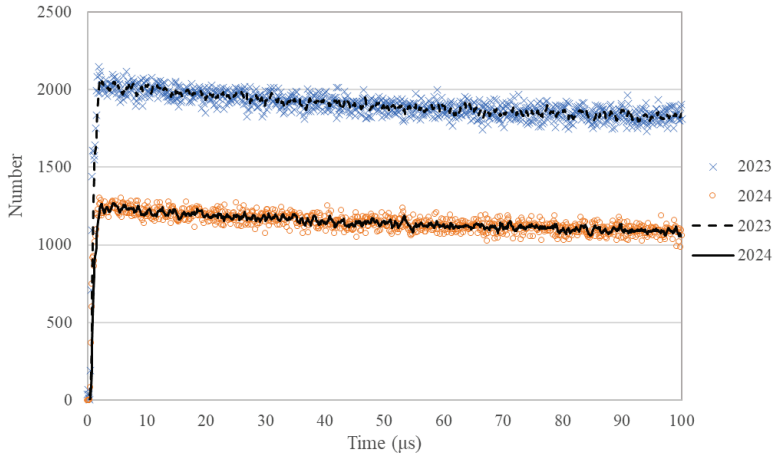

図 2.2.3-38　AFAS-P Top Fork 検出器のパルス間隔分布の比較（0～100μs）

AFAS-P Bottom Fork 検出器におけるアンプのパルス間隔分布を評価した。本評価結果と令和 5 年度（2023 年度）に実施した性能確認試験(参考文献 2)における評価結果を比較した結果（0～1000μs 及び 0～100μs の分布）を図 2.2.3-39 及び図 2.2.3-40 に示す。各グラフ中の×印及び破線は令和 5 年度（2023 年度）に評価したパルス間隔分布及びその移動平均線を示し、○印及び実線は令和 6 年度（2024 年度）に評価したパルス間隔分布及びその移動平均線を示す。

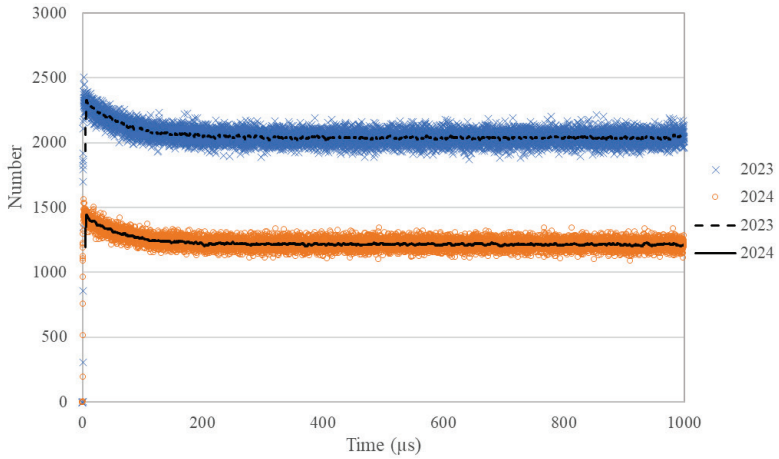

図 2.2.3-39　AFAS-P Bottom Fork 検出器のパルス間隔分布の比較（0～1000μs）

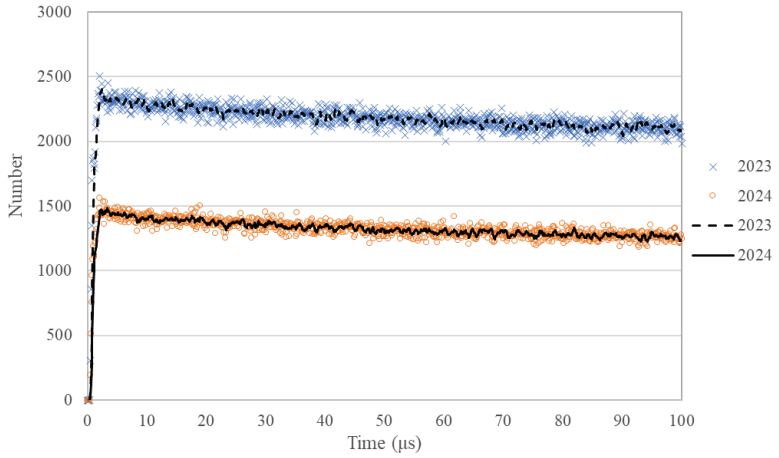

図 2.2.3-40　AFAS-P Bottom Fork 検出器のパルス間隔分布の比較（0～100μs）

2.2.4　考察

本年度の試験では、前年度（令和 5 年度）の評価に使用した ^{252}Cf 中性子線源と同じ線源を用いたため、線源の減衰により得られた計数値は減少したが、評価したパルス間隔分布は前年度に評価したパルス間隔分布とほぼ同一の形状となった。したがって、本年度の試験において得られたパルス間隔分布は正常であり、各アンプ、また、それぞれに接続されている ^{3}He 比例計数管及びケーブルは健全に保たれていると考えられる。

2.3　プルトニウム 240 実効質量解析手法 Known M 法の適用性評価

2.3.1　目的

J-MOX における AFAS を使用した燃料集合体中のプルトニウム 240 実効質量（以下、「^{240}Pu 実効質量」という）の定量には、通常 Known α 法(*9)が適用される。

しかし、J-MOX において燃料集合体を長期保管した場合、アメリシウム 241（以下、「^{241}Am」という）の増加に伴い α 値が増加することにより、燃料集合体中の ^{240}Pu 実効質量を Known α 法により適切に評価できなくなる恐れがある。

そこで、本評価では ^{240}Pu 実効質量の定量に使用可能な別手法である Known M 法(*10)の AFAS 測定への適用性を評価する。

*9: Known α 法とは、α 値を組成情報から計算することで既知とし、増倍 M 及び ^{240}Pu 実効質量を解析する手法。不純物が混入しない MOX（PuO_2-UO_2）等に適用可能である。

*10: Known M 法とは、増倍 M を核分裂性物質量から推定し、α 値及び ^{240}Pu 実効質量を解析する手法。α 値の増加に影響を受けづらい手法である。

2.3.2　方法

本評価は、モンテカルロシミュレーションコード（以下、「MCNPX」という）を用いたシミュレーションにより行う。シミュレーションでは、J-MOX における AFAS による燃料集合体の測定を模擬したモデルを作成し、本モデルにおける AFAS の計数率を評価する。そして、シミュレーションにより得られた計数率を J-MOX において適用が想定される Known α 法及び別手法の Known M 法により解析し、両手法の ^{240}Pu 実効質量の定量精度を比較することにより、AFAS 測定への Known M 法の適用性を評価する。なお、^{240}Pu 実効質量の各解析には、「INCC Software Users Manual(参考文献 3)」に記載されている式を使用する。

評価に使用する各燃料集合体の同位体組成比は、AFAS の要求仕様書(参考文献 4)に記載されている J-MOX において想定される同位体組成比の範囲内であることを前提に、過去の評価に使用した値を元に決定する(参考文献 5 及び 6)。また、経年による α 値の増加の影響を確認するため、燃料集合体を 10 年及び 20 年保管した場合に、基準として定めた同位体組成比がどのように変動するか推定し、これらについても評価を行う。評価に使用する各燃料集合体の同位体組成比を表 2.3.2-1 及び表 2.3.2-2 に示す。

表 2.3.2-1　BWR 燃料集合体の同位体組成比

燃料集合体	^{238}Pu (%) ^{233}U (%)	^{239}Pu (%) ^{234}U (%)	^{240}Pu (%) ^{235}U (%)	^{241}Pu (%) ^{236}U (%)	^{242}Pu (%) ^{238}U (%)	^{241}Am (%)
基準	1.257	61.085	25.759	7.301	4.598	1.136
	0.000	0.005	0.999	0.000	98.995	
10 年保管	1.196	62.916	26.511	4.640	4.737	4.010
	0.000	0.005	0.999	0.000	98.995	
20 年保管	1.127	64.126	27.000	2.918	4.829	5.820
	0.000	0.005	0.999	0.000	98.995	

表 2.3.2-2　PWR 燃料集合体の同位体組成比

燃料集合体	^{238}Pu (%) ^{233}U (%)	^{239}Pu (%) ^{234}U (%)	^{240}Pu (%) ^{235}U (%)	^{241}Pu (%) ^{236}U (%)	^{242}Pu (%) ^{238}U (%)	^{241}Am (%)
基準	1.784	58.817	25.076	8.461	5.862	1.900
	0.000	0.006	0.720	0.000	99.275	
10 年保管	1.707	60.883	25.937	5.404	6.069	5.264
	0.000	0.006	0.720	0.000	99.275	
20 年保管	1.613	62.263	26.505	3.410	6.208	7.399
	0.000	0.006	0.720	0.000	99.275	

詳細な試験手順を以下に示す。

① MCNPX を用いて、J-MOX の AFAS 測定環境において燃料集合体が AFAS にて測定された場合の各検出器のシングル値及びダブル値を推定する。

② Known α 法を使用して、単位長さあたりの ^{240}Pu 実効質量（g/cm）を評価し、有効長を乗じることにより、燃料集合体あたりの ^{240}Pu 実効質量（g）を計算する。

③ Known M 法を使用して、単位長さあたりの ^{240}Pu 実効質量（g/cm）を評価し、有効長を乗じることにより、燃料集合体あたりの ^{240}Pu 実効質量（g）を計算する。なお、解析に使用するキャリブレーションパラメータ（b_{kM}, c_{kM}）は、増倍 M の異なる燃料集合体のモデルを複数作成し、キャリブレーションを行うことで評価する(*11)。

④ ②及び③にて評価した ^{240}Pu 実効質量（g）をそれぞれシミュレーションモデルに与えた ^{240}Pu 実効質量（g）と比較する。

⑤ ①～④を AFAS-B 及び AFAS-P を対象に実施する。

*11: 本評価では、MOX 燃料ペレットの密度 8.82(g/cm^3)を基準として、密度を 8.72 から 8.92 まで 0.01 ずつ変動させた場合の燃料集合体のモデルをそれぞれ作成し、式（2.3）を使用してキャリブレーションを行った。評価したキャリブレーションパラメータを表 2.3.2-3 に示す。

$$M = 1 + b_{kM} m_{239e} + c_{kM} m_{239e}^2 \quad \cdot\cdot\cdot (2.3)$$

ただし、m_{239e} ：^{239}Pu 実効質量

M ： 中性子増倍

表 2.3.2-3　Known M 法による解析に使用したキャリブレーションパラメータ

	b_{kM}	c_{kM}
AFAS-B Collar 検出器	4.82E-06	0
AFAS-P Collar 検出器	2.03E-06	0

2.3.3　結果

各 AFAS の Collar 検出器による BWR 及び PWR 燃料集合体の測定について、シミュレーションから評価した ^{240}Pu 実効質量（以下、「シミュレーション値」という）とシミュレーションモデルに与えた ^{240}Pu 実効質量（以下、「モデル値」という）の%Difference を比較した。BWR 燃料集合体の測定結果を図 2.3.3-1 に、PWR 燃料集合体の測定結果を図 2.3.3-2 に示す。

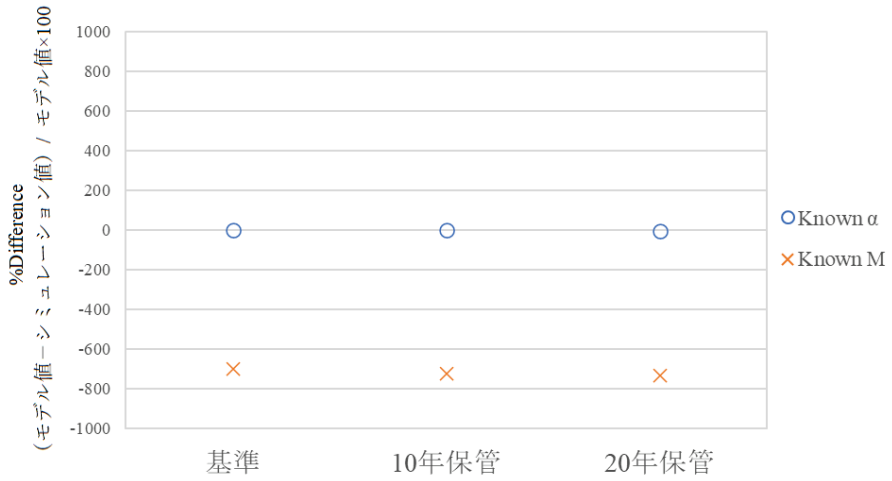

図 2.3.3-1　BWR燃料集合体の^{240}Pu 実効質量の%Difference の比較

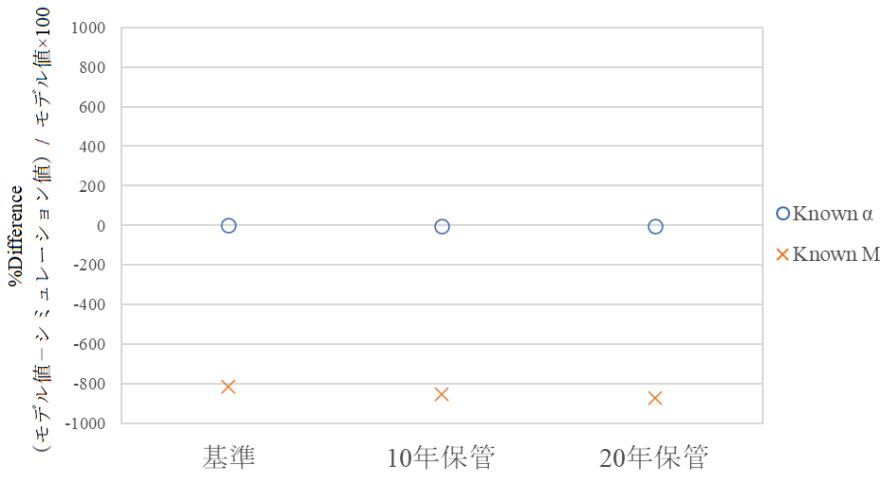

図 2.3.3-2　PWR燃料集合体の^{240}Pu 実効質量の%Difference の比較

2.3.4　考察

図 2.3.3-1 及び図 2.3.3-2 に示すとおり、Known M 法を使用して解析したシミュレーション値とモデル値の%Difference は、BWR 燃料集合体を測定した場合は 700%以上、PWR 燃料集合体を測定した場合は 800%以上だったことから、Known M 法では適切に解析できなかったと考えられる。

Known M 法において ^{240}Pu 実効質量を適切に解析できなかった理由は、「INCC Software Users Manual(参考文献 3)」に記載されている Known M 法の適用条件を満たしていないためである。「INCC Software Users Manual」に記載されている Known M 法の式（2.4）は、測定対象物全体を覆い測定する検出器のように、ダブル値の検出効率がシングル値の検出効率の 2 乗となる検出器に対して適用可能である。これに対して、燃料集合体を部分的に覆い測定する AFAS の Collar 検出器については、ダブル値の検出効率がシングル値の検出効率の 2 乗にはならないことを追加のシミュレーションにより確認しており、「INCC Software Users Manual」に記載されている Known M 法の適用条件を満たさないため ^{240}Pu 実効質量を適切に求められなかった。参考として、シミュレーションにより評価した燃料集合体測定時における AFAS の Collar 検出器のシングル値とダブル値の検出効率を表 2.3.4-1 に示す。

そこで、ダブル値の検出効率がシングル値の検出効率の 2 乗とならない場合においても適用可能な Known M 法の式を式（2.7）のとおり導出し、AFAS の Collar 検出器を用いた燃料集合体測定に適用した。結果及び考察を 2.3.5 項及び 2.3.6 項に示す。

$$f_M(m_{239e}) = \frac{\varepsilon f_d M}{2}\left[k_M m_{239e} F_0 \varepsilon M \nu_{s2} + \left(\frac{M-1}{\nu_{i1}-1}\right)\nu_{i2} S\right] - D = 0 \qquad \cdots (2.4)$$

$$Singles = mF_0\varepsilon_S\nu_{s1}M(1+a) \quad \cdot\cdot\cdot (2.5)$$

$$Doubles = \frac{1}{2}mF_0\varepsilon_D f_d\nu_{s2}M^2\left[1+\left(\frac{M-1}{\nu_{i1}-1}\right)\frac{\nu_{s1}\nu_{i2}}{\nu_{s2}}(1+\alpha)\right] \quad \cdot\cdot\cdot (2.6)$$

$$f_M(m_{239e}) = \frac{\varepsilon_D f_d M}{2\varepsilon_S}\left[k_M m_{239e}F_0\varepsilon_S M\nu_{s2}+\left(\frac{M-1}{\nu_{i1}-1}\right)\nu_{i2}S\right]-D=0 \quad \cdot\cdot\cdot (2.7)$$

ただし、$Singles\ (S)$ ： 増倍補正前のシングル値

$Doubles\ (D)$ ： 増倍補正前のダブル値

m ：^{240}Pu 実効質量

m_{239e} ：^{239}Pu 実効質量

M ： 中性子増倍

a ： 自発核分裂と (α, n) 反応により生じた中性子の比

f_d ： ダブルゲートフラクション

ν_{s1}，ν_{s2} ： 自発核分裂中性子の階乗モーメント

ν_{i1}，ν_{i2} ： 誘発核分裂中性子の階乗モーメント

F_0 ：^{240}Pu の自発核分裂率

k_M ：^{240}Pu 実効質量と ^{239}Pu 実効質量の比（m/m_{239e}）

表 2.3.4-1　シミュレーションから求めた各検出効率

	ε_S	ε_D
AFAS-B Collar 検出器において BWR 燃料集合体を測定した場合	0.027	0.005
AFAS-P Collar 検出器において PWR 燃料集合体を測定した場合	0.025	0.004

2.3.5　結果（再解析後）

新たに導出した Known M 法の式を適用し、各 AFAS の Collar 検出器による BWR 及び PWR 燃料集合体の測定について、シミュレーション値とモデル値の%Difference を比較した。BWR 燃料集合体の測定結果を図 2.3.5-1 に、PWR 燃料集合体の測定結果を図 2.3.5-2 に示す。

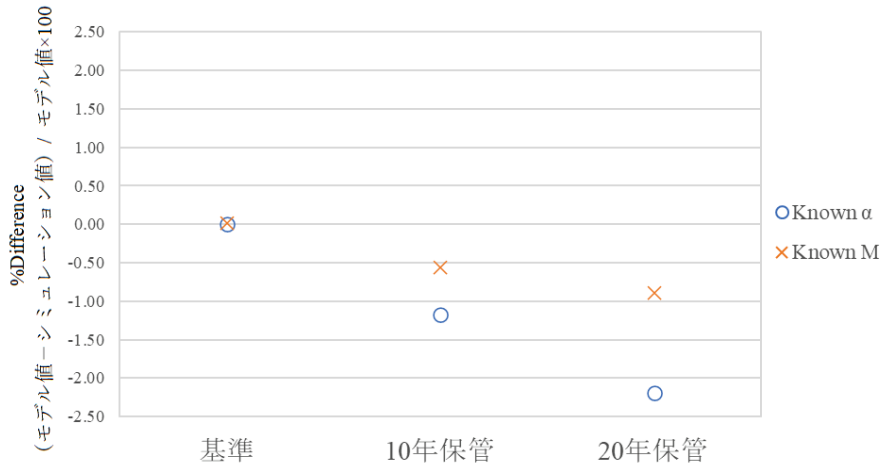

図 2.3.5-1　BWR燃料集合体の^{240}Pu 実効質量の%Difference の比較

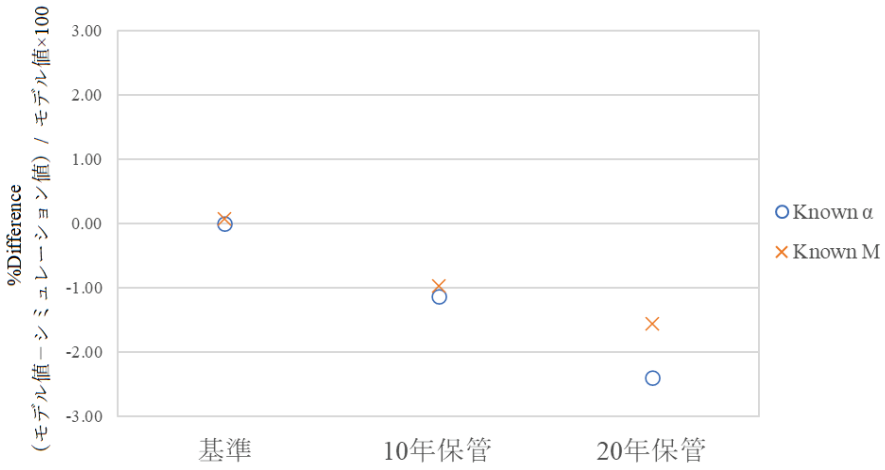

図 2.3.5-2　PWR燃料集合体の^{240}Pu 実効質量の%Difference の比較

2.3.6　考察（再解析後）

図 2.3.5-1 及び図 2.3.5-2 に示すとおり、AFAS の Collar 検出器を用いた BWR 及び PWR 燃料集合体の測定に新たに導出した Known M 法の式を適用した場合、^{240}Pu 実効質量の定量誤差を示す%Difference は、燃料集合体の保管年数の増加に伴い増加し、本評価において最長となる 20 年保管のとき、BWR 燃料集合体について約-0.89%及び PWR 燃料集合体について約-1.56%となった。また、Known M 法の%Difference は、J-MOX において適用予定の Known α 法と比較して同程度または小さかったことから、Known M 法の AFAS 測定への適用性を確認した。

なお、本評価では測定における計数誤差を考慮していないため、J-MOX における実際の測定では、計数誤差があることを留意する必要がある。

3.　AVIS の性能確認試

3.1　パルス間隔分布の評価

3.1.1　目的

装置に不具合が発生した場合、その原因特定の判断材料となる、アンプ毎のパルス間隔分布を評価する。

3.1.2　方法

JAEA が所有するリストモジュール（PTR-32HV）を使用して ^{252}Cf 中性子線源を測定し、AVIS の中性子検出器のアンプ毎のパルス間隔分布を評価する。また、本評価結果と前年度（令和 5 年度）に実施した性能確認試験(参考文献 2)における評価結果を比較する。令和 5 年度及び令和 6 年度の評価結果の例を図 3.1.2-1 に示す。

AVIS の中性子検出器のアンプ数及び配置図を表 3.1.2-1 及び図 3.1.2-2 に示す。

本評価では、1.6 項の表 1.6-1 に示した ^{252}Cf 中性子線源（T1-349）を使用する。

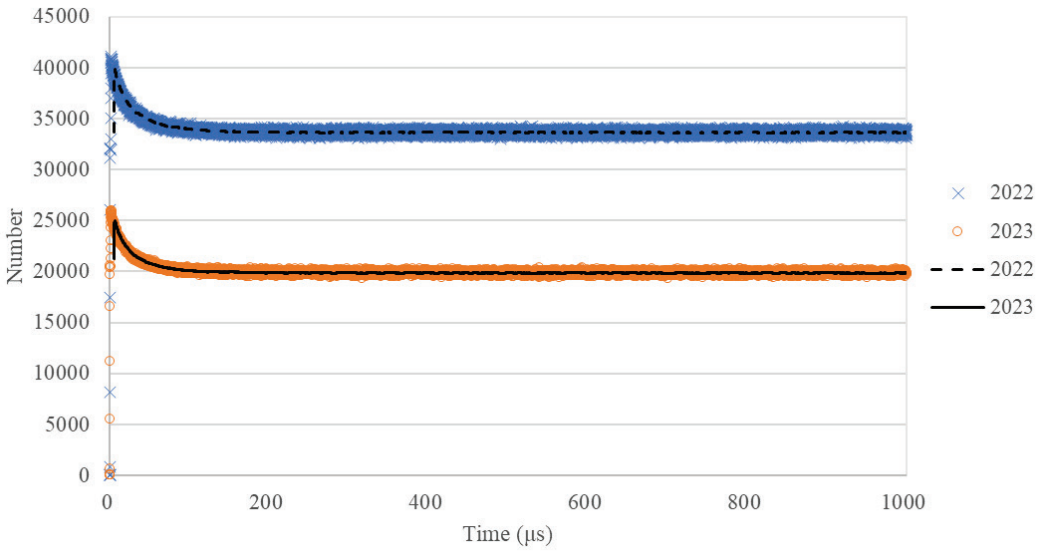

図 3.1.2-1　AVIS の中性子検出器 アンプ A のパルス間隔分布の例

表 3.1.2-1　AVIS におけるアンプ数

検出器		アンプ個数
AVIS	Primary 検出器	7
	Secondary 検出器	7

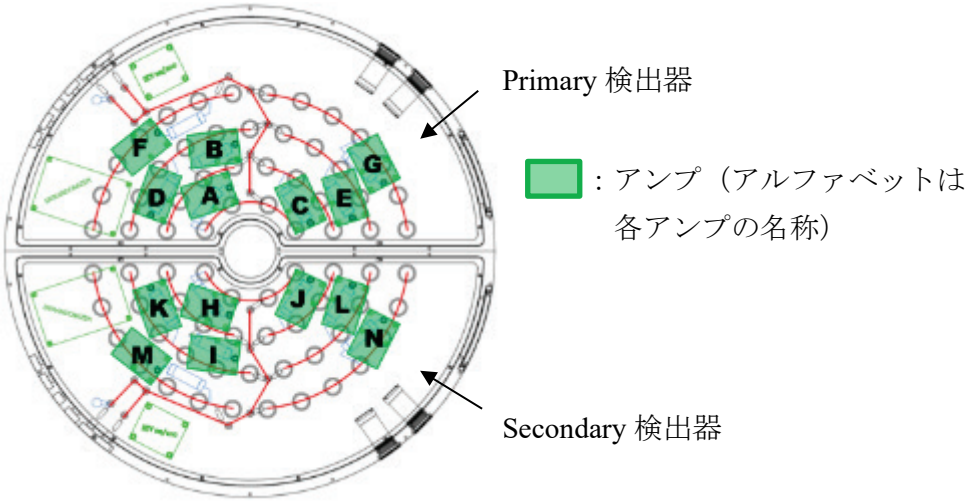

図 3.1.2-2　AVIS のアンプ配置図

詳細な試験手順を以下に示す。

① 線源固定治具を使用して、^{252}Cf 中性子線源を検出器にセットする。
② 検出器にリストモジュールを接続する。
③ 検出器のジャンクションボックスの蓋を外す。
④ 任意のアンプ以外のアンプのジャンパーピンを取り外し、計数機能を停止させる。
⑤ リストモジュール用ソフトウェアを使用してパルスを 10 分間測定し、パルス間隔分布を評価する。
⑥ 全てのアンプについて、④～⑤を実施する。

3.1.3　結果

AVIS における各アンプのパルス間隔分布を評価した。本評価結果と令和 5 年度（2023 年度）に実施した性能確認試験(参考文献 2)における評価結果を比較した結果（0～1000μs 及び 0～100μs の分布）を図 3.1.3-1～3.1.3-28 に示す。各グラフ中の×印及び破線は令和 5 年度（2023 年度）に評価したパルス間隔分布及びその移動平均線を示し、○印及び実線は令和 6 年度（2024 年度）に評価したパルス間隔分布及びその移動平均線を示す。

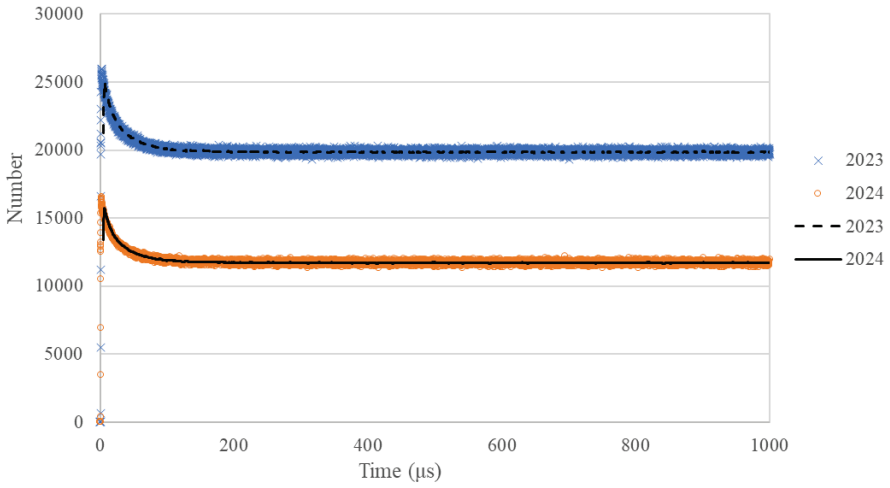

図 3.1.3-1　アンプ A のパルス間隔分布の比較（0～1000μs）

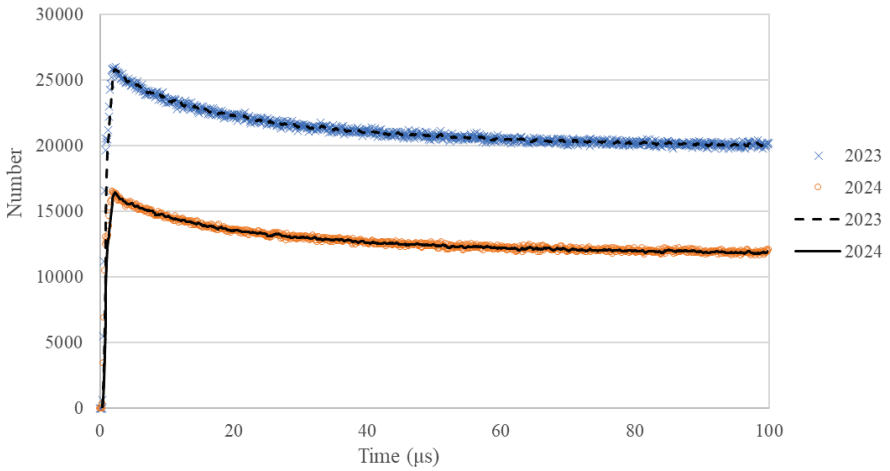

図 3.1.3-2　アンプ A のパルス間隔分布の比較（0～100μs）

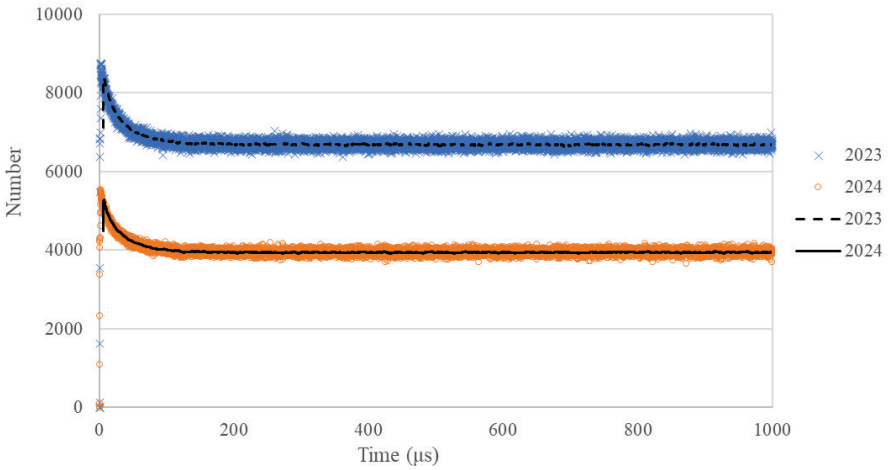

図 3.1.3-3　アンプ B のパルス間隔分布の比較（0～1000μs）

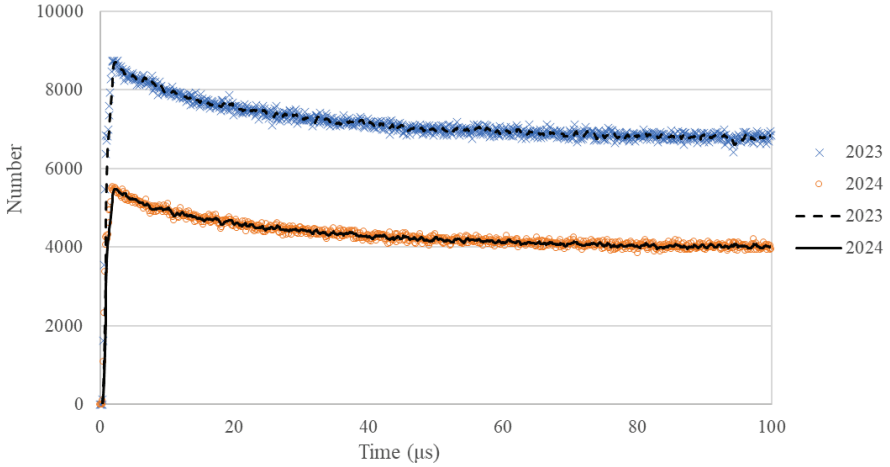

図 3.1.3-4　アンプ B のパルス間隔分布の比較（0～100μs）

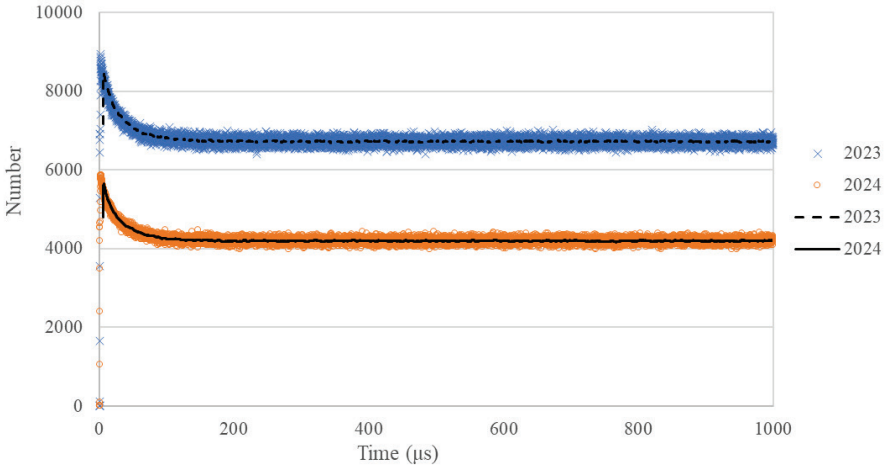

図 3.1.3-5　アンプ C のパルス間隔分布の比較（0～1000μs）

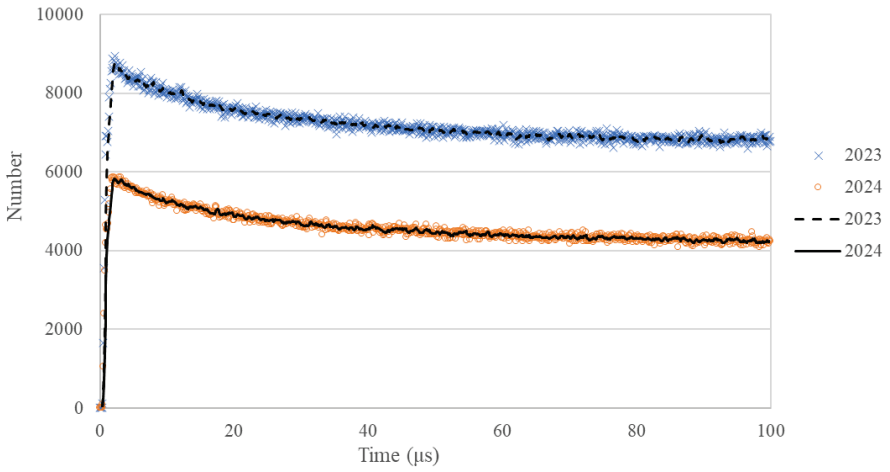

図 3.1.3-6　アンプ C のパルス間隔分布の比較（0～100μs）

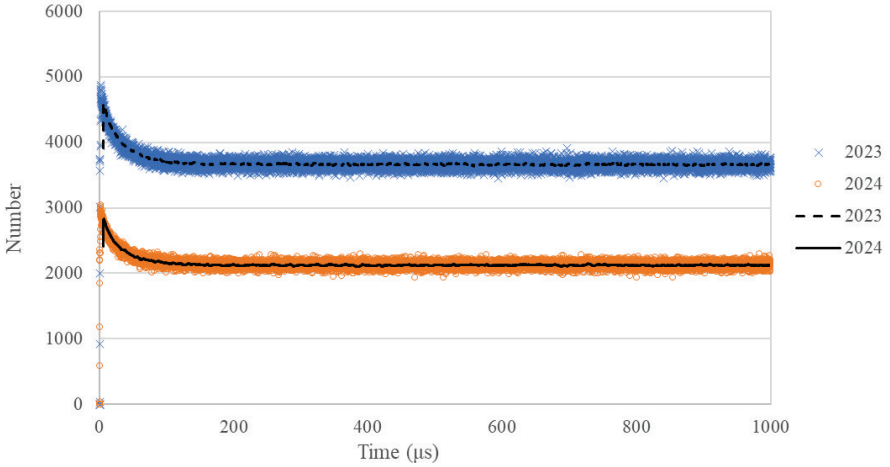

図 3.1.3-7　アンプ D のパルス間隔分布の比較（0～1000μs）

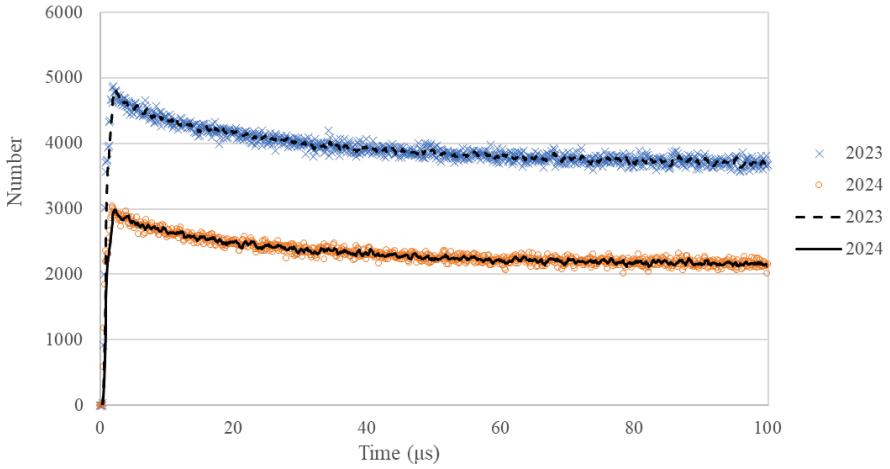

図 3.1.3-8　アンプ D のパルス間隔分布の比較（0～100μs）

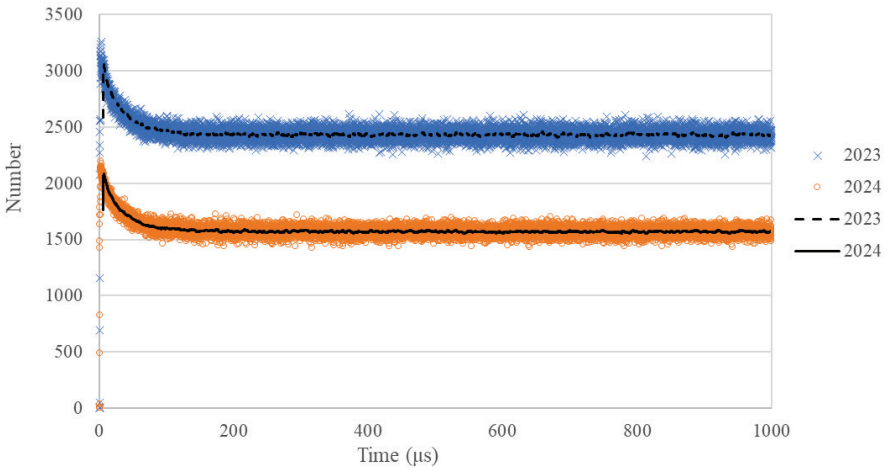

図 3.1.3-9　アンプ E のパルス間隔分布の比較（0～1000μs）

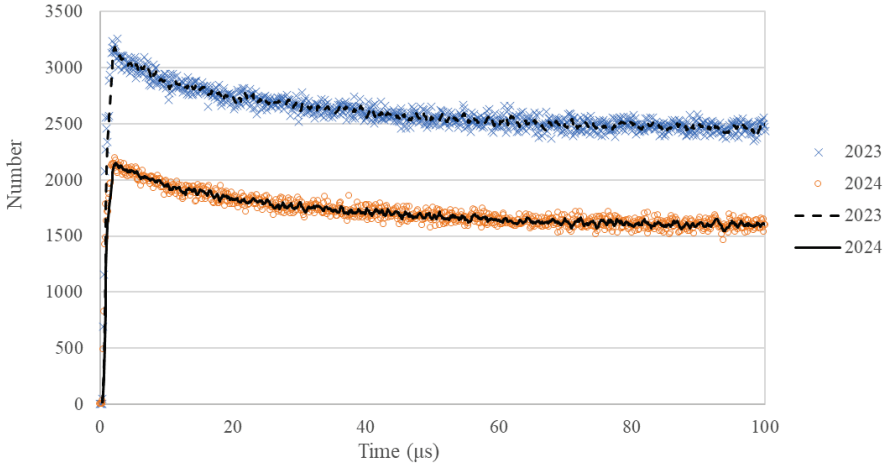

図 3.1.3-10　アンプ E のパルス間隔分布の比較（0～100μs）

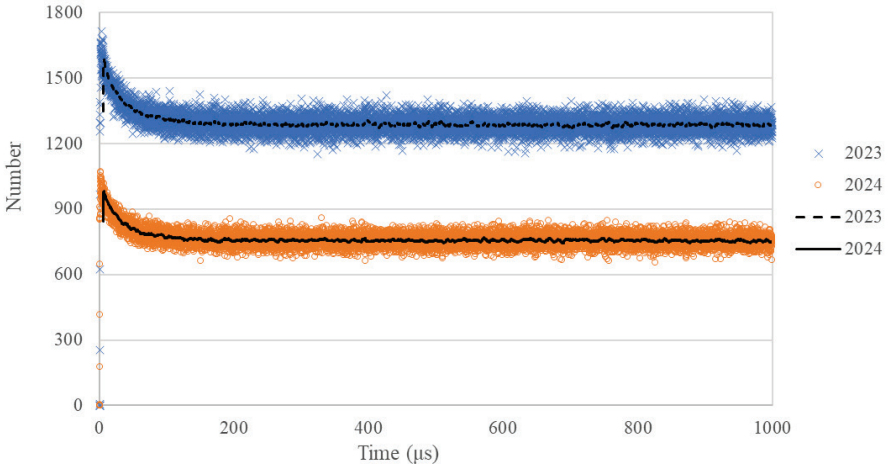

図 3.1.3-11　アンプ F のパルス間隔分布の比較（0～1000μs）

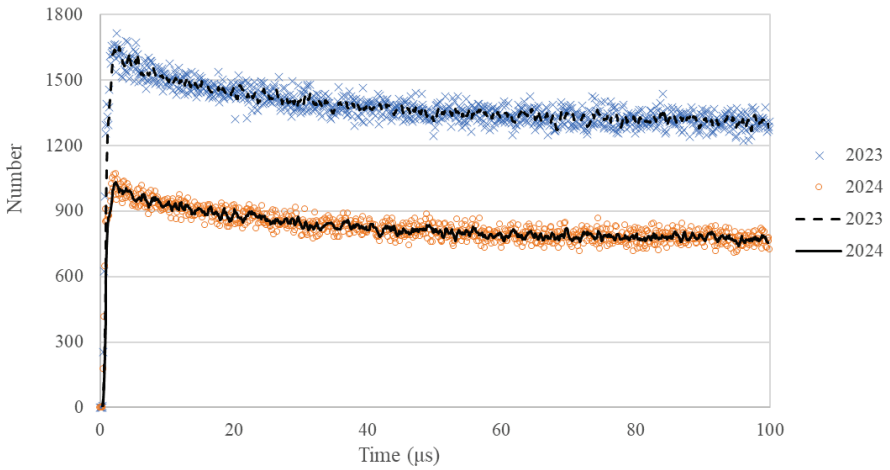

図 3.1.3-12　アンプ F のパルス間隔分布の比較（0～100μs）

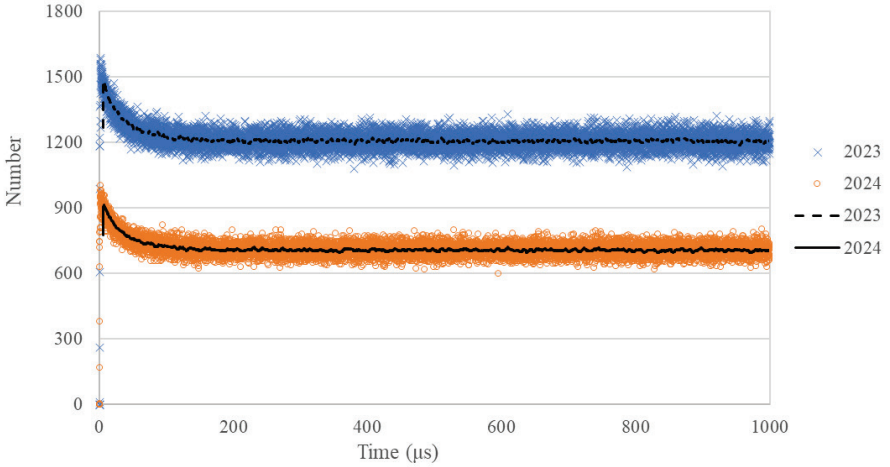

図 3.1.3-13　アンプ G のパルス間隔分布の比較（0～1000μs）

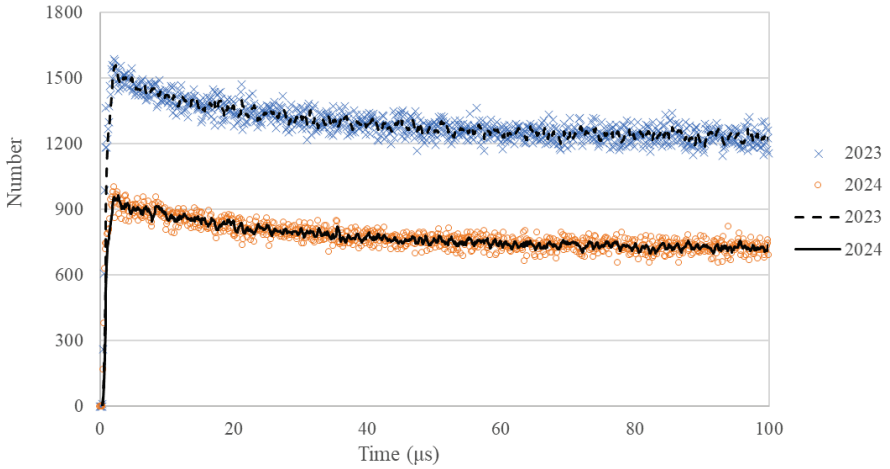

図 3.1.3-14　アンプ G のパルス間隔分布の比較（0～100μs）

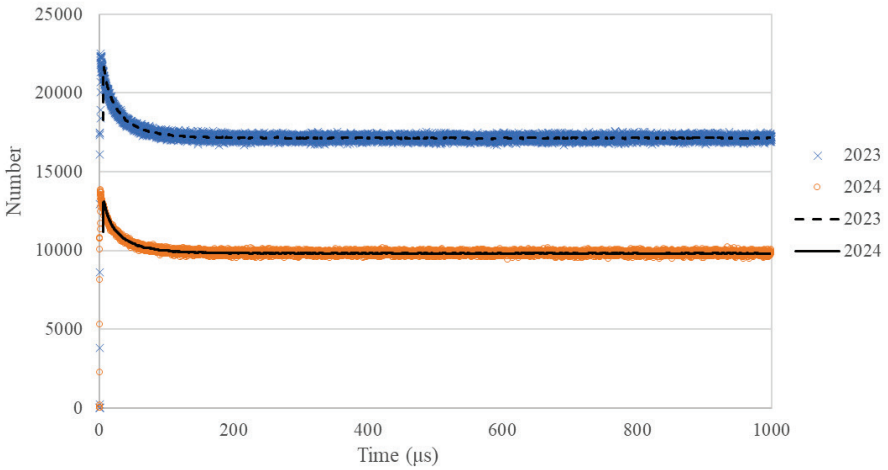

図 3.1.3-15　アンプ H のパルス間隔分布の比較（0～1000μs）

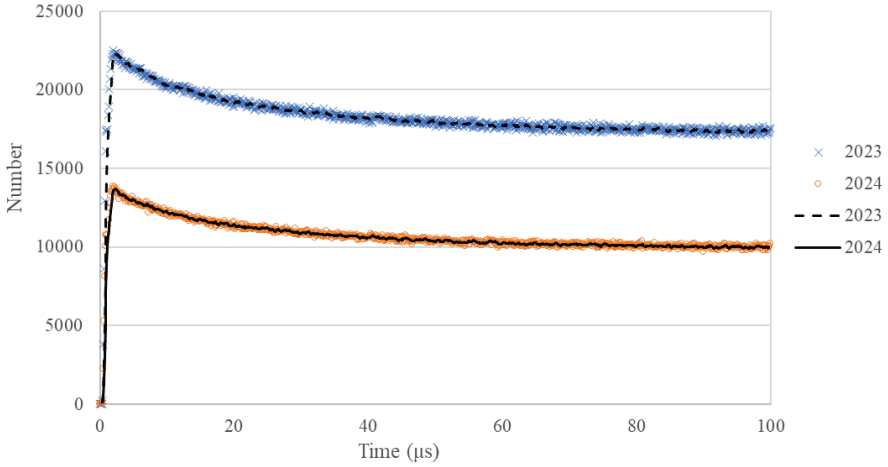

図 3.1.3-16　アンプ H のパルス間隔分布の比較（0～100μs）

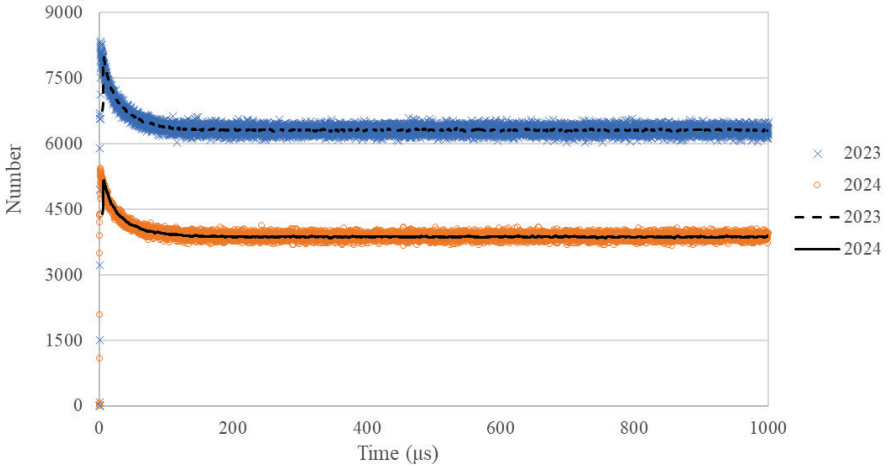

図 3.1.3-17　アンプ I のパルス間隔分布の比較（0～1000μs）

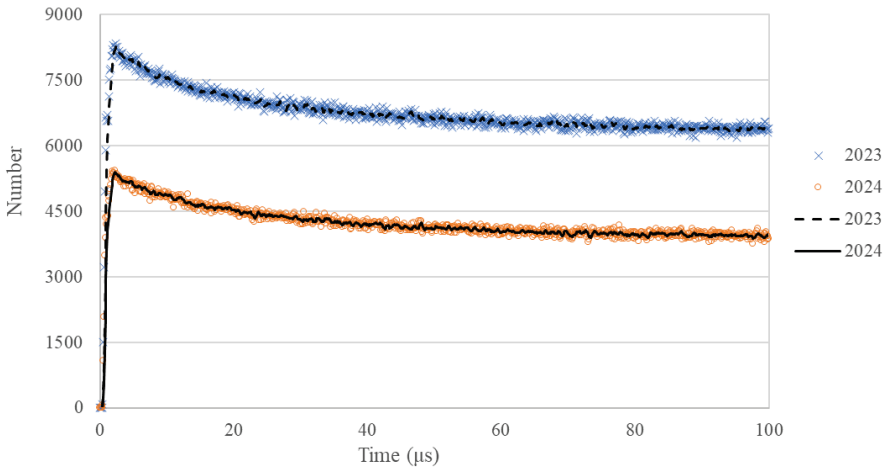

図 3.1.3-18　アンプ I のパルス間隔分布の比較（0～100μs）

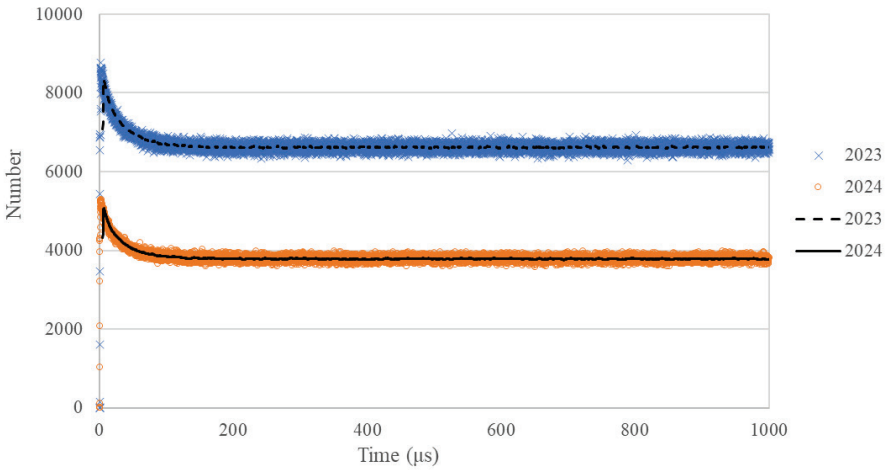

図 3.1.3-19　アンプ J のパルス間隔分布の比較（0～1000μs）

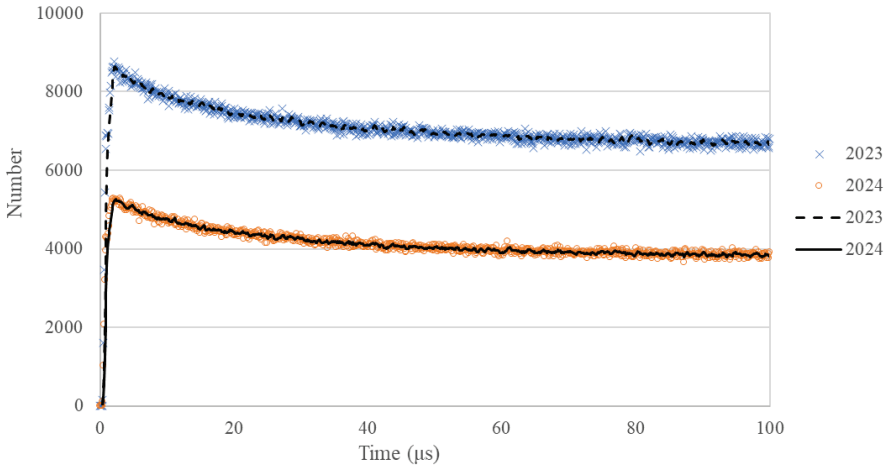

図 3.1.3-20　アンプ J のパルス間隔分布の比較（0～100μs）

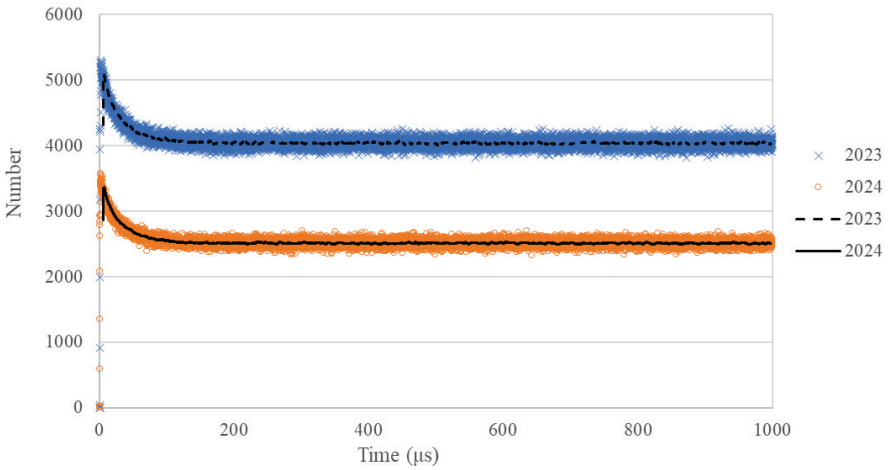

図 3.1.3-21　アンプ K のパルス間隔分布の比較（0～1000μs）

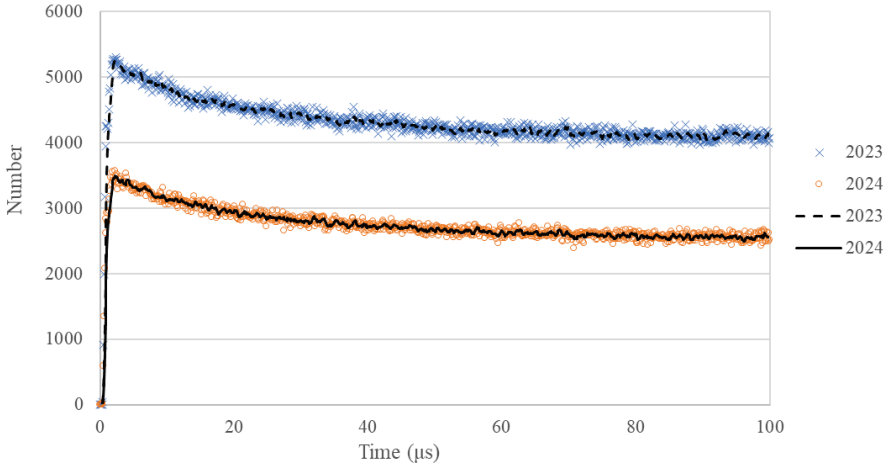

図 3.1.3-22　アンプ K のパルス間隔分布の比較（0～100μs）

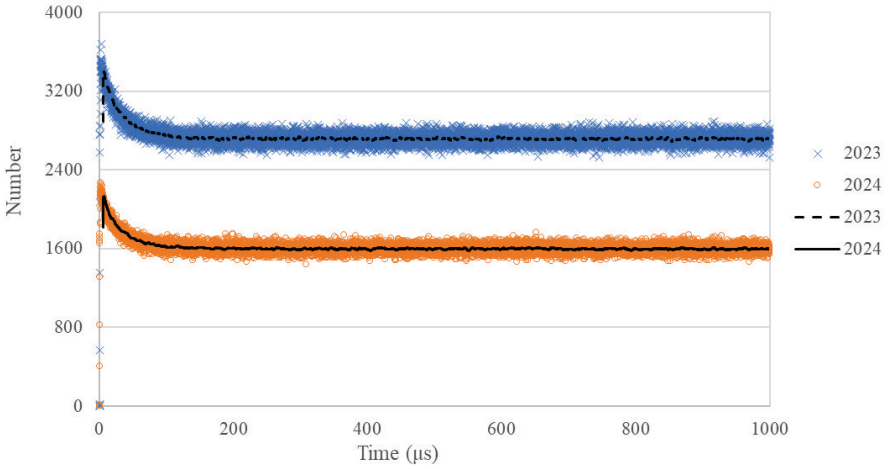

図 3.1.3-23　アンプ L のパルス間隔分布の比較（0～1000μs）

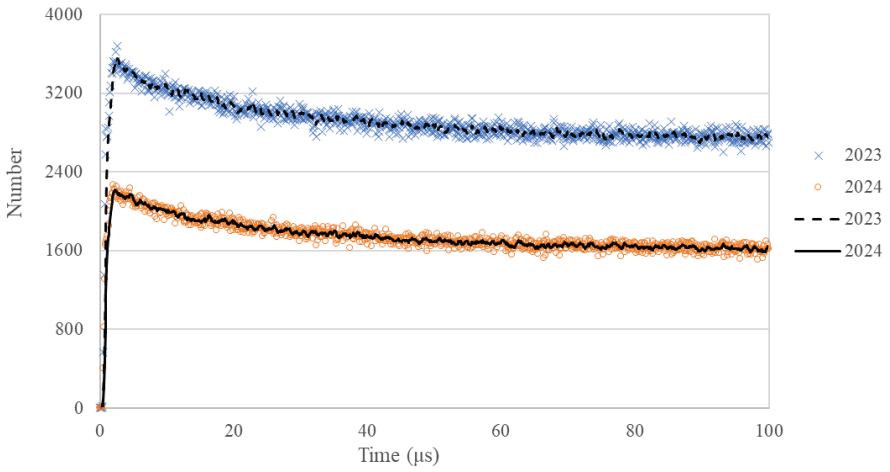

図 3.1.3-24　アンプ L のパルス間隔分布の比較（0～100μs）

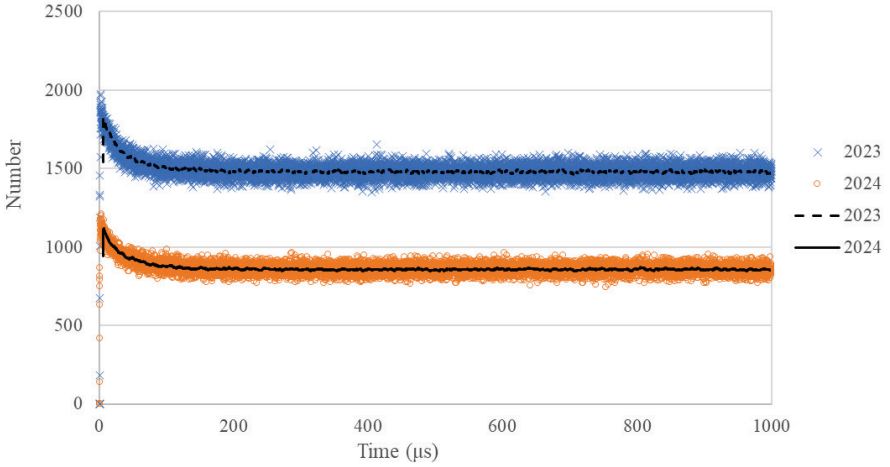

図 3.1.3-25　アンプ M のパルス間隔分布の比較（0～1000μs）

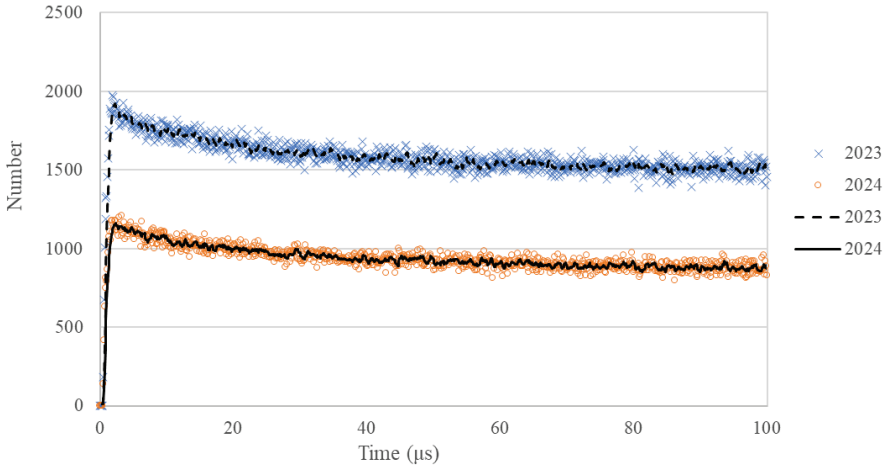

図 3.1.3-26　アンプ M のパルス間隔分布の比較（0～100μs）

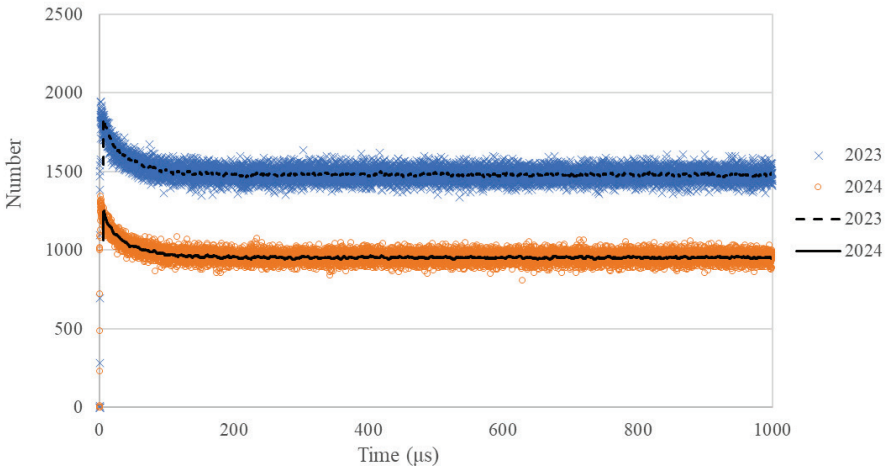

図 3.1.3-27　アンプ N のパルス間隔分布の比較（0～1000μs）

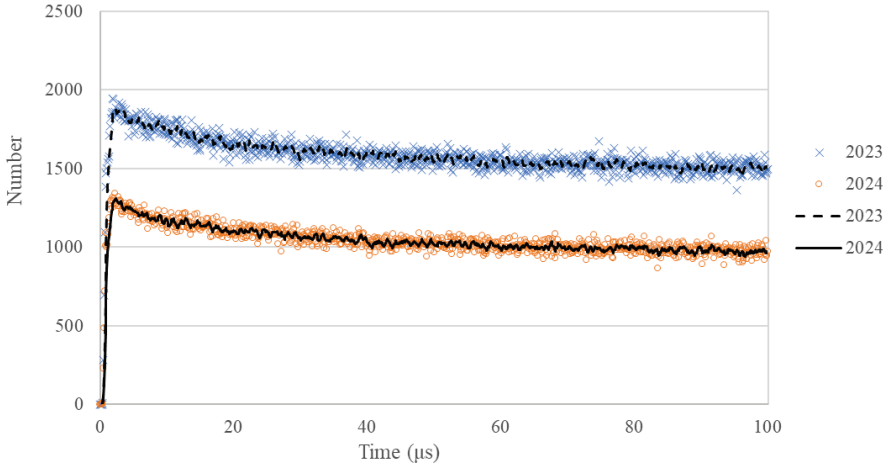

図 3.1.3-28　アンプ N のパルス間隔分布の比較（0～100μs）

3.1.4　考察

2.2 項の AFAS における評価と同様に、本年度の試験では、前年度（令和 5 年度）の評価に使用した ^{252}Cf 中性子線源と同じ線源を用いたため、線源の減衰により得られた計数値は減少したが、本年度評価したパルス間隔分布は前年度とほぼ同一の形状となり、異常な分布は確認されなかった。したがって、本年度の試験において得られたパルス間隔分布は正常であり、各アンプ、また、それぞれに接続されている ^{3}He 比例計数管及びケーブルは健全に保たれていると考えられる。

4.　IPCA2 の性能確認試験

4.1　長期管理限界の妥当性確認

4.1.1　目的

IPCA2 を構成する中性子検出器、HPGe（高純度ゲルマニウム）ガンマ線検出器及びロードセル（荷重変換器）から得られる計測値の長期管理限界の妥当性確認（長期管理限界内に収まっているか否かの確認）を定期的に行う。

4.1.2　方法

中性子検出器については、連続的なバックグラウンド測定及び定期的な Pu 線源及び Cm-244 線源の測定を実施し、検出器の長期安定性の評価及び得られた計数値とこれらから評価された検出器の中性子検出効率が長期管理限界内に収まっていることを確認する。また、本測定期間における測定環境の温度及び湿度を測定し、計数値または中性子検出効率との相関の有無を確認する。さらに、IAEA の要望に従い、適宜 IAEA から支給された UDL-1 による性能確認試験を行う。

HPGe ガンマ線検出器ついては、令和 2 年度から発生している全てのガンマ線検出器において性能が低下する事象の確認を実施したため、測定は行われなかった。

ロードセルについては、定期的な分銅測定を実施し、得られた重量が長期管理限界内に収まっていることを確認する。

詳細な試験手順を以下に示す。

（1）中性子検出器におけるバックグラウンド測定

① JSR-15 を使用して連続的なバックグラウンド測定を実施する。

② ①により取得した計数値における異常値の有無を確認し、検出器の長期安定性を評価する。

③ ①～②を月 1 回の頻度で実施する。

（2）中性子検出器における Pu 線源及び Cm-244 線源測定

① 線源（Pu 線源または Cm-244 線源）を検出器にセットする。

② JSR-15 及び UDL-1 を使用して線源測定を実施する。また、測定環境の温湿度測定を実施する。

③ Pu 線源測定により取得したシングル値から求めた中性子検出効率及び Cm-244 線源測定により取得したシングル値が長期管理限界内に収まっていることを確認する。また、測定結果と温湿度の相関の有無を評価する。

④ ①～③を定期的に実施する。

（3）ロードセルにおける分銅測定

① 分銅をロードセルにセットする。

② 分銅測定を実施する。

③ ①～②を定期的に実施する。

4.1.3　結果

令和 6 年 4 月から令和 7 年 3 月の期間において、LANL が実施した IPCA2 の長期管理限界の妥当性確認結果及び UDL-1 による性能確認試験結果を添付資料に示す。いずれの項目においても測定結果は管理値以内であった。

4.1.4　考察

実施した試験の各測定結果は、いずれも管理値以内であったことから、本期間において IPCA2 の性能は正常に維持されており、長期間安定して動作していたと考えられる。

4.2　ハードウェアの修理及び動作確認

4.2.1　目的

IPCA2 に接続されている Power Supply Box について不具合が確認されたため、修理及び修理後の動作確認を行う。

4.2.2　方法

① Power Supply Box を新品に交換する。
② 新品の Power Supply Box に AC 電源を接続する。
③ 交換した機器が正常に動作することを確認する。

4.2.3　結果

LANL が実施した IPCA2 のハードウェアの修理及び動作確認の結果を添付資料に示す。

令和 5 年 7 月に発生した Cm-244 線源測定の際に計数率が低下した事象について、LANL が原因調査を行った。調査結果に基づき、不具合が生じていた Power Supply Box を新品に交換することで上記事象は解消した。

4.2.4　考察

LANL が実施した調査の結果、Power Supply Box を接続していた UPS が故障したため、Power Supply Box に供給される交流電圧が不十分となり、Power Supply Box が故障したことを特定した。なお、令和 7 年度に LANL から J-MOX へ IPCA2 の出荷が予定されているため、UPS の交換については実施していない。

4.3　測定パラメータの評価

4.3.1　目的

IPCA2 の性能を確認するため、測定パラメータの評価を行う。

4.3.2　方法

① HV プラトーの測定を行い、適切な供給電圧を評価する。

② 各ゲート幅（10, 20, 40, 80, 160μs）におけるダブル値を測定し、適切なゲート幅及びダイアウェイタイムを評価する。

③ 評価した測定パラメータと IPCA2 の動作設定に用いられる標準的な測定パラメータを比較する。

4.3.3　結果

LANL が実施した測定パラメータの評価結果を添付資料に示す。評価した測定パラメータと IPCA2 の動作設定に用いられる標準的な測定パラメータを比較した結果、概ね一致した。

4.3.4　考察

評価した測定パラメータは標準的な測定パラメータと概ね一致したため、IPCA2 の性能は一定に保たれていることを確認した。

5. 結論

AFAS の性能確認試験では、「長期管理限界の妥当性確認」、「パルス間隔分布の評価」、及び「プルトニウム 240 実効質量解析手法 Known M 法の適用性評価」を実施した。

「長期管理限界の妥当性確認」では、AFAS の長期安定性を確認するため、令和 6 年 4 月から令和 7 年 3 月までの期間において連続的なバックグラウンド測定及び定期的な ^{252}Cf 中性子線源測定を実施した。その結果、各検出器において得られたほぼ全てのバックグラウンドの測定値及び ^{252}Cf 中性子線源測定の計数率は長期管理限界の範囲内に収まったことから、本測定期間中、AFAS は正常な状態を維持し、長期間安定して動作していたことを確認した。

「パルス間隔分布の評価」では、装置の不具合の原因を特定する際の判断材料となるアンプ毎のパルス間隔分布を取得するため、リストモジュールを使用して ^{252}Cf 中性子線源を測定した。その結果、得られたパルス間隔分布には、異常は確認されず、また、令和 5 年度に得られたパルス間隔分布と同様の傾向を示したことから、本評価において得られたパルス間隔分布は正常であり、各アンプ、また、それぞれに接続されている ^{3}He 比例計数管及びケーブルは健全に保たれていることを確認した。

「プルトニウム 240 実効質量解析手法 Known M 法の適用性評価」では、長期保管された燃料集合体の測定に対して Known M 法の適用性を確認するため、モンテカルロシミュレーション（MCNPX）による評価を実施し、Known α 法及び Known M 法を使用して解析した燃料集合体中のプルトニウム 240 実効質量を比較した。その結果、AFAS の Collar 検出器において燃料集合体を測定する場合、Known M 法においてプルトニウム 240 実効質量を適切に解析できなかった。したがって、AFAS の Collar 検出器を用いた BWR 及び PWR 燃料集合体の測定に適用可能な Known M 法の式を新たに導出し、当該式を適用することで Known M 法の AFAS 測定への適用性を確認した。

AVIS の性能確認試験「パルス間隔分布の評価」では、AFAS における評価と同様に、リストモジュールを使用して ^{252}Cf 中性子線源を測定した。その結果、得られたパルス間隔分布には、異常は確認されず、令和 5 年度に得られたパルス間隔分布と同様の傾向を示したことから、本評価において得られたパルス間隔分布は正常であり、各アンプ、また、それぞれに接続されている ^{3}He 比例計数管及びケーブルは健全に保たれていることを確認した。

IPCA2 の性能確認試験では、「長期管理限界の妥当性確認」、「ハードウェアの修理及び動作確認」及び「測定パラメータの評価」を実施した。

「長期管理限界の妥当性確認」では、IPCA2 の長期安定性及び IPCA2 の各検出器及びロードセルにおいて得られた計測値が長期管理限界内に収まることを確認するため、令和 6 年 4 月から令和 7 年 3 月までの期間において、中性子検出器については、連続的なバックグラウンド測定及び定期的な中性子線源測定を、ロードセルについては、定期的な分銅測定を実施した。その結果、中性子検出器及びロードセルにおいて取得された計数値及び重量測定値は長期管理限界の範囲内に収まったことから、本測定期間中、

IPCA2 は正常な状態を維持し、長期間安定して動作したことを確認した。また、UDL-1 については、定期的な中性子線源測定において JSR-15 と同様の測定性能であることを確認した。

「ハードウェアの修理及び動作確認」では、令和 5 年 7 月に発生した不具合事象の原因を特定し、令和 7 年 1 月に IPCA2 に接続されている Power Supply Box の交換を行った。その結果、交換した機器は正常に動作し、不具合事象が発生しないことを確認した。

「測定パラメータの評価」では、IPCA2 の性能を確認するため、供給電圧、ゲート幅及びダイアウェイタイムの評価を行い、IPCA2 の動作設定に用いられる標準的な測定パラメータと比較した。その結果、評価した測定パラメータは標準的な測定パラメータと概ね一致したため、IPCA2 の性能は一定に保たれていることを確認した。

以上

【参考文献】

参考文献 1：M. T. Swinhoe, J. B. Marlow and H.O. Menlove, “Technical Specification for the Improved Plutonium Canister Assay System (IPCA2)” (2009)

参考文献 2：大型混合酸化物燃料加工施設保障措置機器性能確認試験報告書 (令和 5 年度)

参考文献 3：“INCC Software Users Manual” (2009) (LA-UR-01-6761)

参考文献 4：“User Requirements AFAS Version No.1, IAEA” (2007) (SG-TE-GNRL-ZZ-1010)

参考文献 5：M. T. Swinhoe, “Simulation of BWR MOX Fuel in AFAS” (2015) (LA-CP-15-20176)

参考文献 6：M. T. Swinhoe, H.O. Menlove, C. D. Real and J. B. Marlow, “Factory Acceptance Test Report for the Advanced Fuel Assembly Assay System (AFAS) PWR” (2008) (LA-CP-08-0730)

添 付 資 料

【線源情報】

線源証明書

Eckert & Ziegler
Isotope Products

24937 Avenue Tibbitts
Valencia, California 91355

Tel 661•309•1010
Fax 661•257•8303

NOMINAL SOURCE CERTIFICATE

Customer: Daiichi Clarity Company Limited
Purchase Order No.: CA619
Model No.: N-252
Catalog No.: CF230140100U
Capsule Type: A3014
Active Diameter/Mass: 1.6 mm (0.062 ")
Cover: Stainless steel
Backing: Stainless steel

Certificate Date: 04-Oct-10
Quantity: 1
SS&DR No.: CA406S102S
ISO Classification: ISO/99/C66535
Special Form No.: USA/0351/S Rev 6
Nuclide Half Life: 2.645 ± 0.008 years
Recommended Working Life: 15 years

Nuclide	Source No.	Activity	Neutron Output [neutrons/second]	Reference Date
Cf-252	H4-694	100 µCi/3.7 MBq	4.24E+05	15-Oct-10

Impurities: See Technical Data sheet.

Leak Test Information is on Reverse Side:

Remarks:
- This document uses the numerical convention where 1.000 = 1 and 1,000 = 10^3.
- Nuclear data was taken from "Table of Radioactive Isotopes", edited by Virginia Shirley, 1986.

[redacted] [redacted] 5Oct10

Name **Signature** **Date**

Notebook Page: 1465-40

Eckert & Ziegler
Isotope Products

24937 Avenue Tibbitts
Valencia, California 91355

Tel 661•309•1010
Fax 661•257•8303

Cf-252 Technical data

The Cf-252 used to prepare your order was taken from Eckert & Ziegler Isotope Products Laboratories Lot #5343201 and it had the following composition as of 20 Sep 10.

Nuclide	Mass %	Activity %
Cf-249	9.013	0.0886
Cf-250	11.904	3.1129
Cf-251	3.956	0.0151
Cf-252	75.126	96.7830
Cf-254	0.00002	0.00044

The Cm-248 decay product was last separated on 17 Sep 09

Isotopic composition provided by Oak Ridge National Laboratory

If you have any questions, please contact Eckert & Ziegler Isotope Products Technical Service: 661-309-1010

Eckert & Ziegler
Isotope Products

24937 Avenue Tibbitts
Valencia, California 91355

Tel 661•309•1010
Fax 661•257•8303

NOMINAL SOURCE CERTIFICATE

Customer: Daiichi Clarity Co., Ltd.
Purchase Order No.: DN125
Model No.: N-252
Catalog No.: CF230140100U
Capsule Type: A3014-01
Active Diameter: 0.062" (1.6 mm)
Cover: Stainless Steel
Backing: Stainless Steel

Certificate Date: 2020-09-25
Quantity: 1
SS&DR No.: CA0406S102S
ISO/ANSI Classification: ANSI 77C66535
Special Form No.: USA/0351/S-96 Rev 10
Nuclide Half Life: 2.645 ± 0.008 years
Recommended Working Life: 15 years

Nuclide	Source No.	Activity	Radiation Output	Reference Date
Cf-252	T1-349	3.7 MBq (100 μCi)	3.92 E+05 n/s	2020-10-01

Impurities: See Technical Data Sheet

Leak Test Information is on Reverse Side:

Remarks:
- This document uses the numerical convention where 1.000 = 1 and 1,000 = 10^3.
- This document uses the date convention YYYY-MM-DD in accordance with ISO 8601.
- Nuclear data were taken from "Table of Radioactive Isotopes", edited by Virginia Shirley, 1986.
- ANSI classification is equivalent to ISO2919.

[redacted] [redacted] 2020-09-25

Name **Signature** **Date**

Notebook Page: 2190-01

ISO 9001 CERTIFIED

Eckert & Ziegler
Isotope Products

24937 Avenue Tibbitts
Valencia, California 91355

Tel 661•309•1010
Fax 661•257•8303

www.ezag.com

Cf-252 Technical Data

The Cf-252 used to prepare your order of source T1-349 was taken from Eckert & Ziegler Isotope Products Laboratories Lot #6050711. It had the following composition as of 2020-08-19.

Nuclide	Mass %	Activity %
Cf-249	14.572	0.1723
Cf-250	17.660	5.553
Cf-251	6.859	0.0314
Cf-252	60.910	94.243

The Cm-248 decay product was last separated on 2018-04-19.

Isotopic composition provided by Oak Ridge National Laboratory

If you have any questions, please contact Eckert & Ziegler Isotope Products Technical Service: 661-309-1010

[redacted] [redacted] 2020-9-25

name, title signature date

IPL Form055-2 Rev. A

【AFAS 性能確認試験】

(1)　2.1　長期管理限界の妥当性確認

INCC 5.1.2

```
               Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_01
         Electronics id:  JSR-12
  Inventory change code:
               I/O code:
      Measurement date:  24.04.05  14:36:13
     Results file name:  44503613.VER
     Inspection number:
               Item id:  BWR TF
            Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
    Measurement option:  Verification
           Data source:  Review disk file
              QC tests:  On
     Error calculation:  Sample method
    Accidentals method:  Measured
        Inspector name:
       Passive comment:

           Isotopics id:  Default
  Isotopics source code:  OD
                  Pu238:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu239:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                  Pu241:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu242:   0.0000 +-   0.0000      0.0000 +-   0.0000
                Pu date:  00.01.01               24.04.05
                  Am241:   0.0000 +-   0.0000      0.0000 +-   0.0000
                Am date:  00.01.01               24.04.05

               Predelay:      1.50
            Gate length:     64.00
        2nd gate length:     64.00
           High voltage:   1720
          Die away time:     50.0000
             Efficiency:      0.0080
  Multiplicity deadtime:      0.0000
 Coefficient A deadtime:      0.0000
 Coefficient B deadtime:      0.0000
 Coefficient C deadtime:      0.0000
  Doubles gate fraction:      0.0001
  Triples gate fraction:      0.0001

 Normalization constant:      1.0000 +-    0.0000

 Passive singles bkgrnd:      0.000 +-     0.000
 Passive doubles bkgrnd:      0.000 +-     0.000
 Passive triples bkgrnd:      0.000 +-     0.000
 Passive scaler1 bkgrnd:      0.000
 Passive scaler2 bkgrnd:      0.000

  Number passive cycles:         10
       Count time (sec):         60

Passive error messages

Known alpha analysis error
```


Results

```
                 Singles:        76.857 +-     0.323
                 Doubles:         0.383 +-     0.045
                 Triples:         0.000 +-     0.000
                Scaler 1:       132.323 +-     0.366
                Scaler 2:         0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	4571	45	23	7927	0	Pass
2	4563	36	18	7869	0	Pass
3	4579	56	22	7897	0	Pass
4	4583	49	27	7935	0	Pass
5	4551	39	28	8077	0	Pass
6	4556	39	26	7958	0	Pass
7	4651	45	20	8002	0	Pass
8	4670	41	23	7826	0	Pass
9	4662	56	19	7946	0	Pass
10	4728	56	26	7957	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	76.183	0.367	0.000	0.000	Pass
2	76.050	0.300	0.000	0.000	Pass
3	76.317	0.567	0.000	0.000	Pass
4	76.383	0.367	0.000	0.000	Pass
5	75.850	0.183	0.000	0.000	Pass
6	75.933	0.217	0.000	0.000	Pass
7	77.517	0.417	0.000	0.000	Pass
8	77.833	0.300	0.000	0.000	Pass
9	77.700	0.617	0.000	0.000	Pass
10	78.800	0.500	0.000	0.000	Pass

INCC 5.1.2

```
               Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_02
         Electronics id:  JSR-12
  Inventory change code:
               I/O code:
      Measurement date:  24.04.05  15:04:21
     Results file name:  445P0421.VER
     Inspection number:
               Item id:  BWR BF
            Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
    Measurement option:  Verification
           Data source:  Review disk file
              QC tests:  On
     Error calculation:  Sample method
    Accidentals method:  Measured
        Inspector name:
       Passive comment:

           Isotopics id:  Default
  Isotopics source code:  OD
                  Pu238:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu239:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                  Pu241:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu242:   0.0000 +-   0.0000      0.0000 +-   0.0000
                Pu date:  00.01.01               24.04.05
                  Am241:   0.0000 +-   0.0000      0.0000 +-   0.0000
                Am date:  00.01.01               24.04.05

               Predelay:      1.50
            Gate length:     64.00
        2nd gate length:     64.00
           High voltage:   1720
          Die away time:     50.0000
             Efficiency:      0.0060
  Multiplicity deadtime:      0.0000
 Coefficient A deadtime:      0.0000
 Coefficient B deadtime:      0.0000
 Coefficient C deadtime:      0.0000
  Doubles gate fraction:      0.0001
  Triples gate fraction:      0.0001

 Normalization constant:      1.0000 +-    0.0000

 Passive singles bkgrnd:      0.000 +-     0.000
 Passive doubles bkgrnd:      0.000 +-     0.000
 Passive triples bkgrnd:      0.000 +-     0.000
 Passive scaler1 bkgrnd:      0.000
 Passive scaler2 bkgrnd:      0.000

  Number passive cycles:         10
       Count time (sec):         60

Passive error messages

No known alpha calibration
```


Results

```
                 Singles:       136.997 +-     0.385
                 Doubles:         1.320 +-     0.093
                 Triples:         0.000 +-     0.000
                Scaler 1:         4.405 +-     0.099
                Scaler 2:         0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	8205	147	76	263	0	Pass
2	8225	143	74	300	0	Pass
3	8240	172	85	270	0	Pass
4	8164	144	80	260	0	Pass
5	8120	140	76	247	0	Pass
6	8368	155	68	279	0	Pass
7	8204	169	74	284	0	Pass
8	8134	190	73	248	0	Pass
9	8270	156	78	250	0	Pass
10	8268	133	73	242	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	136.750	1.183	0.000	0.000	Pass
2	137.083	1.150	0.000	0.000	Pass
3	137.333	1.450	0.000	0.000	Pass
4	136.067	1.067	0.000	0.000	Pass
5	135.333	1.067	0.000	0.000	Pass
6	139.467	1.450	0.000	0.000	Pass
7	136.733	1.583	0.000	0.000	Pass
8	135.567	1.950	0.000	0.000	Pass
9	137.833	1.300	0.000	0.000	Pass
10	137.800	1.000	0.000	0.000	Pass

202404_AFAS-B_Bottom Fork.txt

INCC 5.1.2

```
               Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_02
         Electronics id:  JSR-12
  Inventory change code:
              I/O code:
      Measurement date:  24.04.05  15:04:21
     Results file name:  445P0421.VER
     Inspection number:
               Item id:  BWR BF
            Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
    Measurement option:  Verification
           Data source:  Review disk file
              QC tests:  On
     Error calculation:  Sample method
    Accidentals method:  Measured
        Inspector name:
       Passive comment:

           Isotopics id:  Default
  Isotopics source code:  OD
                  Pu238:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu239:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                  Pu241:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu242:   0.0000 +-   0.0000      0.0000 +-   0.0000
                Pu date:  00.01.01               24.04.05
                  Am241:   0.0000 +-   0.0000      0.0000 +-   0.0000
                Am date:  00.01.01               24.04.05

               Predelay:      1.50
            Gate length:     64.00
        2nd gate length:     64.00
           High voltage:   1720
          Die away time:     50.0000
             Efficiency:      0.0060
  Multiplicity deadtime:      0.0000
 Coefficient A deadtime:      0.0000
 Coefficient B deadtime:      0.0000
 Coefficient C deadtime:      0.0000
  Doubles gate fraction:      0.0001
  Triples gate fraction:      0.0001

 Normalization constant:      1.0000 +-    0.0000

 Passive singles bkgrnd:      0.000 +-     0.000
 Passive doubles bkgrnd:      0.000 +-     0.000
 Passive triples bkgrnd:      0.000 +-     0.000
 Passive scaler1 bkgrnd:      0.000
 Passive scaler2 bkgrnd:      0.000

  Number passive cycles:         10
       Count time (sec):         60

Passive error messages

No known alpha calibration
```

(1)

202404_AFAS-B_Bottom Fork.txt

Results

```
                 Singles:      136.997 +-     0.385
                 Doubles:        1.320 +-     0.093
                 Triples:        0.000 +-     0.000
                Scaler 1:        4.405 +-     0.099
                Scaler 2:        0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	8205	147	76	263	0	Pass
2	8225	143	74	300	0	Pass
3	8240	172	85	270	0	Pass
4	8164	144	80	260	0	Pass
5	8120	140	76	247	0	Pass
6	8368	155	68	279	0	Pass
7	8204	169	74	284	0	Pass
8	8134	190	73	248	0	Pass
9	8270	156	78	250	0	Pass
10	8268	133	73	242	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	136.750	1.183	0.000	0.000	Pass
2	137.083	1.150	0.000	0.000	Pass
3	137.333	1.450	0.000	0.000	Pass
4	136.067	1.067	0.000	0.000	Pass
5	135.333	1.067	0.000	0.000	Pass
6	139.467	1.450	0.000	0.000	Pass
7	136.733	1.583	0.000	0.000	Pass
8	135.567	1.950	0.000	0.000	Pass
9	137.833	1.300	0.000	0.000	Pass
10	137.800	1.000	0.000	0.000	Pass

(2)

202404_AFAS-P_Top Fork.txt

INCC 5.1.2

```
               Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_02
         Electronics id:  JSR-12
  Inventory change code:
              I/O code:
      Measurement date:  24.04.05  15:18:25
     Results file name:  445P1825.VER
     Inspection number:
               Item id:  PWR TF
            Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
    Measurement option:  Verification
           Data source:  Review disk file
              QC tests:  On
     Error calculation:  Sample method
    Accidentals method:  Measured
        Inspector name:
       Passive comment:

           Isotopics id:  Default
  Isotopics source code:  OD
                  Pu238:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu239:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                  Pu241:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu242:   0.0000 +-   0.0000      0.0000 +-   0.0000
                Pu date:  00.01.01               24.04.05
                  Am241:   0.0000 +-   0.0000      0.0000 +-   0.0000
                Am date:  00.01.01               24.04.05

               Predelay:      1.50
            Gate length:     64.00
        2nd gate length:     64.00
           High voltage:   1720
          Die away time:     50.0000
             Efficiency:      0.0126
  Multiplicity deadtime:      0.0000
 Coefficient A deadtime:      0.0000
 Coefficient B deadtime:      0.0000
 Coefficient C deadtime:      0.0000
  Doubles gate fraction:      0.0001
  Triples gate fraction:      0.0001

 Normalization constant:      1.0000 +-    0.0000

 Passive singles bkgrnd:      0.000 +-     0.000
 Passive doubles bkgrnd:      0.000 +-     0.000
 Passive triples bkgrnd:      0.000 +-     0.000
 Passive scaler1 bkgrnd:      0.000
 Passive scaler2 bkgrnd:      0.000

  Number passive cycles:         10
       Count time (sec):         60

Passive error messages

No known alpha calibration
```

(1)

202404_AFAS-P_Top Fork.txt

Results

```
                 Singles:        2.762 +-     0.069
                 Doubles:        0.000 +-     0.000
                 Triples:        0.000 +-     0.000
                Scaler 1:      120.037 +-     0.290
                Scaler 2:        0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	178	0	0	7255	0	Pass
2	163	0	0	7240	0	Pass
3	157	0	0	7262	0	Pass
4	161	0	0	7193	0	Pass
5	142	0	0	7204	0	Pass
6	178	0	0	7105	0	Pass
7	172	0	0	7197	0	Pass
8	172	0	0	7259	0	Pass
9	183	0	0	7123	0	Pass
10	151	0	0	7184	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	2.967	0.000	0.000	0.000	Pass
2	2.717	0.000	0.000	0.000	Pass
3	2.617	0.000	0.000	0.000	Pass
4	2.683	0.000	0.000	0.000	Pass
5	2.367	0.000	0.000	0.000	Pass
6	2.967	0.000	0.000	0.000	Pass
7	2.867	0.000	0.000	0.000	Pass
8	2.867	0.000	0.000	0.000	Pass
9	3.050	0.000	0.000	0.000	Pass
10	2.517	0.000	0.000	0.000	Pass

(2)

INCC 6.23.2.9 HM32 Not Validated

```
                  Facility: PPFF
      Material balance area: XXXX
             Detector type: PASS
               Detector id: AFAS-P TOP
            Electronics id: UDL-1
          Measurement date: 24.04.05     15:20:35
         Results file name: 445P2035.NOR
         Inspection number:
        Measurement option: Normalization
               Data source: IAEA DataZ file
     Detector configuration: Passive
                 QC tests: On
       Accidentals method: Measured
           Inspector name:
                  Comment:
           Ending comment: xx


                 Predelay:      1.500
              Gate length:     64.000
             High voltage:       1720
            Die away time:    50.0000
               Efficiency:     0.0126
     Multiplicity deadtime:     0.0000
    Coefficient A deadtime:     0.0000
    Coefficient B deadtime:     0.0000
   *Coefficient C deadtime:     0.0000
     Doubles gate fraction:     0.0001
     Triples gate fraction:     0.0001

    Passive singles bkgrnd:      2.370  +-      0.074
    Passive doubles bkgrnd:      0.000  +-      0.000
    Passive triples bkgrnd:      0.000  +-      0.000
    Passive scaler1 bkgrnd:      0.000
    Passive scaler2 bkgrnd:      0.000
          Number of cycles:         10
         Count time (sec):     60.000
```

Summed raw data

```
                Number of good cycles:         10
                    Total count time:        600
          Shift register singles sum:      71972
Shift register reals + accidentals sum:      1232
       Shift register accidentals sum:       532
        Shift register 1st scaler sum:         0
        Shift register 2nd scaler sum:         0
```

Summed multiplicity distributions

```
         R+A sums       A sums
```

Results

```
                          Singles:    117.583  +-      0.305
                          Doubles:      1.167  +-      0.072
                          Triples:      0.000  +-      0.000
                         Scaler 1:      0.000  +-      0.000
                         Scaler 2:      0.000  +-      0.000
```


Normalization results for reference source: H4-694

```
        Current normalization constant:      1.000  +-      0.000
           Cf252 expected singles rate:    116.321  +-      0.260
           Cf252 measured singles rate:    117.583  +-      0.305
        Singles rate expected/measured:      0.989  +-      0.040
            New normalization constant:      1.000  +-      0.000
                Normalization test  --  data quality is good.
```

Cycle raw data

Count time (sec): 60.000

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	7216	108	56	0	0	Pass
2	7222	141	61	0	0	Pass
3	7296	133	58	0	0	Pass
4	7180	142	49	0	0	Pass
5	7185	109	60	0	0	Pass
6	7262	122	53	0	0	Pass
7	7129	115	57	0	0	Pass
8	7179	115	37	0	0	Pass
9	7195	113	43	0	0	Pass
10	7108	134	58	0	0	Pass

Cycle DTC rate data

Cycle	Singles	Doubles	Triples	QC Tests
1	117.897	0.867	0.000	Pass
2	117.997	1.333	0.000	Pass
3	119.230	1.250	0.000	Pass
4	117.297	1.550	0.000	Pass
5	117.380	0.817	0.000	Pass
6	118.663	1.150	0.000	Pass
7	116.447	0.967	0.000	Pass
8	117.280	1.300	0.000	Pass
9	117.547	1.167	0.000	Pass
10	116.097	1.267	0.000	Pass

INCC 5.1.2

```
                 Facility:  JMOX
     Material balance area:  JM2G
            Detector type:  AFAS
              Detector id:  JSR_03
           Electronics id:  JSR-12
    Inventory change code:
                 I/O code:
         Measurement date:  24.04.05  15:34:29
        Results file name:  445P3429.VER
        Inspection number:
                 Item id:  PWR COLLAR
               Stratum id:  XXXX
            Material type:  Pu
   Original declared mass:  0.000
       Measurement option:  Verification
              Data source:  Review disk file
                 QC tests:  On
        Error calculation:  Sample method
       Accidentals method:  Measured
           Inspector name:
          Passive comment:

             Isotopics id:  Default
    Isotopics source code:  OD
                   Pu238:    0.0000 +-   0.0000      0.0000 +-   0.0000
                   Pu239:    0.0000 +-   0.0000      0.0000 +-   0.0000
                   Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                   Pu241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                   Pu242:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu date:  00.01.01                24.04.05
                   Am241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Am date:  00.01.01                24.04.05

                Predelay:      1.50
             Gate length:     64.00
          2nd gate length:     64.00
            High voltage:   1720
           Die away time:     50.0000
              Efficiency:      0.1620
    Multiplicity deadtime:     86.5000
   Coefficient A deadtime:      0.3458
   Coefficient B deadtime:      0.0299
   Coefficient C deadtime:      0.0000
    Doubles gate fraction:      0.0001
    Triples gate fraction:      0.0001

   Normalization constant:      1.0000 +-    0.0000

   Passive singles bkgrnd:      0.000 +-     0.000
   Passive doubles bkgrnd:      0.000 +-     0.000
   Passive triples bkgrnd:      0.000 +-     0.000
   Passive scaler1 bkgrnd:      0.000
   Passive scaler2 bkgrnd:      0.000

    Number passive cycles:         10
          Count time (sec):         60
```

Passive error messages

No passive calibration curve calibration
No known alpha calibration

Results

```
                          Singles:     2055.722 +-     3.065
                          Doubles:      350.522 +-     1.593
                          Triples:        0.000 +-     0.000
                         Scaler 1:       17.933 +-     0.195
                         Scaler 2:        0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	123594	37518	16373	1096	0	Pass
2	122597	36892	16240	1052	0	Pass
3	122948	37107	15973	1041	0	Pass
4	123033	37335	16001	1042	0	Pass
5	122520	36782	15982	1041	0	Pass
6	124376	37562	16497	1104	0	Pass
7	123652	37301	16050	1150	0	Pass
8	123331	36751	16320	1075	0	Pass
9	123914	37522	16518	1052	0	Pass
10	123249	37459	16111	1107	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	2060.267	352.668	0.000	0.000	Pass
2	2043.644	344.443	0.000	0.000	Pass
3	2049.496	352.483	0.000	0.000	Pass
4	2050.914	355.819	0.000	0.000	Pass
5	2042.361	346.912	0.000	0.000	Pass
6	2073.305	351.335	0.000	0.000	Pass
7	2061.234	354.436	0.000	0.000	Pass
8	2055.882	340.759	0.000	0.000	Pass
9	2065.602	350.317	0.000	0.000	Pass
10	2054.515	356.053	0.000	0.000	Pass

```
INCC 6.23.2.9 HM32 Not Validated

                   Facility: PPFF
       Material balance area: XXXX
               Detector type: PASS
                 Detector id: AFAS-P COLLAR
             Electronics id: UDL-1
          Measurement date: 24.04.05     15:37:10
         Results file name: 445P3710.NOR
          Inspection number:
        Measurement option: Normalization
                Data source: IAEA DataZ file
     Detector configuration: Passive
                  QC tests: On
       Accidentals method: Measured
           Inspector name:
                  Comment:
           Ending comment: xx


                  Predelay:      1.500
               Gate length:     64.000
              High voltage:       1720
             Die away time:    50.0000
                Efficiency:     0.1620
     Multiplicity deadtime:    86.5000
    Coefficient A deadtime:     0.3458
    Coefficient B deadtime:     0.0299
   *Coefficient C deadtime:     0.0000
     Doubles gate fraction:     0.0001
     Triples gate fraction:     0.0001

    Passive singles bkgrnd:     14.202  +-      0.268
    Passive doubles bkgrnd:      0.007  +-      0.006
    Passive triples bkgrnd:      0.000  +-      0.000
    Passive scaler1 bkgrnd:      0.000
    Passive scaler2 bkgrnd:      0.000
          Number of cycles:         10
          Count time (sec):     60.000

Summed raw data

                Number of good cycles:         10
                    Total count time:        600
          Shift register singles sum:    1233144
Shift register reals + accidentals sum:    372646
       Shift register accidentals sum:    162580
        Shift register 1st scaler sum:         0
        Shift register 2nd scaler sum:         0

Summed multiplicity distributions

         R+A sums       A sums

Messages

Normalization test -- data quality is inadequate

Results

                              Singles:   2041.404  +-      2.815
                              Doubles:    350.352  +-      1.210
                              Triples:      0.000  +-      0.000
```



```
                              Scaler 1:      0.000  +-      0.000
                              Scaler 2:      0.000  +-      0.000

Normalization results for reference source: H4-694

         Current normalization constant:      1.000  +-      0.000
            Cf252 expected doubles rate:    344.821  +-      0.523
            Cf252 measured doubles rate:    350.352  +-      1.210
         Doubles rate expected/measured:      0.984  +-      0.004
             New normalization constant:      1.000  +-      0.000
                 Normalization test  --  data quality is inadequate.
             Measured percent precision:      0.345
             Required percent precision:      0.300
        Repeat measurement for at least:      0.000

Cycle raw data

Count time (sec):      60.000

Cycle   Singles      R+A        A        Scaler1    Scaler2  QC Tests
   1     123313     37339     16089          0          0 Pass
   2     123028     37202     16335          0          0 Pass
   3     122513     36801     16131          0          0 Pass
   4     123362     37649     16416          0          0 Pass
   5     122445     36950     15820          0          0 Pass
   6     124166     37357     16498          0          0 Pass
   7     123629     37493     16187          0          0 Pass
   8     123614     36979     16229          0          0 Pass
   9     123690     37296     16433          0          0 Pass
  10     123384     37580     16442          0          0 Pass

Cycle DTC rate data

Cycle      Singles       Doubles       Triples  QC Tests
   1      2041.380       354.412         0.000  Pass
   2      2036.629       348.023         0.000  Pass
   3      2028.042       344.737         0.000  Pass
   4      2042.197       354.128         0.000  Pass
   5      2026.908       352.409         0.000  Pass
   6      2055.602       347.892         0.000  Pass
   7      2046.649       355.346         0.000  Pass
   8      2046.399       346.073         0.000  Pass
   9      2047.666       347.958         0.000  Pass
  10      2042.564       352.544         0.000  Pass
```



```
INCC 5.1.2

               Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_03
        Electronics id:  JSR-12
  Inventory change code:
               I/O code:
      Measurement date:  24.04.05  15:48:33
     Results file name:  445P4833.VER
     Inspection number:
               Item id:  PWR BF
            Stratum id:  XXXX
         Material type:  Pu
 Original declared mass:  0.000
     Measurement option:  Verification
            Data source:  Review disk file
              QC tests:  On
      Error calculation:  Sample method
     Accidentals method:  Measured
         Inspector name:
        Passive comment:

           Isotopics id:  Default
  Isotopics source code:  OD
                 Pu238:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu239:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                 Pu241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu242:    0.0000 +-   0.0000      0.0000 +-   0.0000
               Pu date:  00.01.01                24.04.05
                 Am241:    0.0000 +-   0.0000      0.0000 +-   0.0000
               Am date:  00.01.01                24.04.05

               Predelay:      1.50
            Gate length:     64.00
        2nd gate length:     64.00
           High voltage:   1720
          Die away time:     50.0000
             Efficiency:      0.0127
  Multiplicity deadtime:      0.0000
 Coefficient A deadtime:      0.0000
 Coefficient B deadtime:      0.0000
 Coefficient C deadtime:      0.0000
  Doubles gate fraction:      0.0001
  Triples gate fraction:      0.0001

 Normalization constant:      1.0000 +-    0.0000

 Passive singles bkgrnd:      0.000 +-     0.000
 Passive doubles bkgrnd:      0.000 +-     0.000
 Passive triples bkgrnd:      0.000 +-     0.000
 Passive scaler1 bkgrnd:      0.000
 Passive scaler2 bkgrnd:      0.000

  Number passive cycles:         10
        Count time (sec):        60

Passive error messages

No passive calibration curve calibration
No known alpha calibration
```



```
Results

                              Singles:        180.228 +-      1.367
                              Doubles:          2.482 +-      0.201
                              Triples:          0.000 +-      0.000
                             Scaler 1:        126.682 +-      0.283
                             Scaler 2:          0.000 +-      0.000

Passive cycle raw data

Cycle   Singles      R+A         A       Scaler1    Scaler2  QC Tests
   1     10802      241       132         7593          0  Pass
   2     10871      301       109         7622          0  Pass
   3     11519      533       296         7624          0  Pass
   4     10776      255       115         7517          0  Pass
   5     10797      261       127         7631          0  Pass
   6     10677      273       121         7507          0  Pass
   7     10699      242       107         7645          0  Pass
   8     10721      266       137         7604          0  Pass
   9     10623      259       142         7588          0  Pass
  10     10652      259       115         7678          0  Pass

Passive cycle rate data

Cycle      Singles       Doubles       Triples          Mass  QC Tests
   1       180.033         1.817         0.000         0.000  Pass
   2       181.183         3.200         0.000         0.000  Pass
   3       191.983         3.950         0.000         0.000  Pass
   4       179.600         2.333         0.000         0.000  Pass
   5       179.950         2.233         0.000         0.000  Pass
   6       177.950         2.533         0.000         0.000  Pass
   7       178.317         2.250         0.000         0.000  Pass
   8       178.683         2.150         0.000         0.000  Pass
   9       177.050         1.950         0.000         0.000  Pass
  10       177.533         2.400         0.000         0.000  Pass
```

INCC 6.23.2.9 HM32 Not Validated

```
                  Facility: PPFF
      Material balance area: XXXX
             Detector type: UDL-1
               Detector id: AFAS-P BOTTOM
           Electronics id: PASS
        Measurement date: 24.04.05     15:51:48
         Results file name: 445P5148.NOR
         Inspection number:
       Measurement option: Normalization
              Data source: IAEA DataZ file
     Detector configuration: Passive
                 QC tests: On
       Accidentals method: Measured
           Inspector name:
                  Comment:
           Ending comment: xx


                 Predelay:      1.500
              Gate length:     64.000
             High voltage:       1720
            Die away time:    50.0000
               Efficiency:     0.0127
     Multiplicity deadtime:     0.0000
    Coefficient A deadtime:     0.0000
    Coefficient B deadtime:     0.0000
   *Coefficient C deadtime:     0.0000
     Doubles gate fraction:     0.0001
     Triples gate fraction:     0.0001

    Passive singles bkgrnd:      1.602  +-      0.059
    Passive doubles bkgrnd:      0.000  +-      0.000
    Passive triples bkgrnd:      0.000  +-      0.000
    Passive scaler1 bkgrnd:      0.000
    Passive scaler2 bkgrnd:      0.000
          Number of cycles:         10
          Count time (sec):     60.000
```

Summed raw data

```
                Number of good cycles:         10
                   Total count time:        600
          Shift register singles sum:      76082
Shift register reals + accidentals sum:      1378
       Shift register accidentals sum:       644
        Shift register 1st scaler sum:         0
        Shift register 2nd scaler sum:         0
```

Summed multiplicity distributions

```
        R+A sums       A sums
```

Messages

Normalization test -- data quality is inadequate

Results

```
                    Singles:    125.202  +-      0.451
                    Doubles:      1.223  +-      0.073
                    Triples:      0.000  +-      0.000
```



```
                    Scaler 1:      0.000  +-      0.000
                    Scaler 2:      0.000  +-      0.000
```

Normalization results for reference source: H4-694

```
        Current normalization constant:      1.000  +-      0.000
           Cf252 expected singles rate:    124.663  +-      0.205
           Cf252 measured singles rate:    125.202  +-      0.451
        Singles rate expected/measured:      0.996  +-      0.040
            New normalization constant:      1.000  +-      0.000
                Normalization test  --  data quality is inadequate.
```

Cycle raw data

Count time (sec): 60.000

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	7665	149	67	0	0	Pass
2	7589	119	81	0	0	Pass
3	7602	140	72	0	0	Pass
4	7616	135	54	0	0	Pass
5	7394	138	65	0	0	Pass
6	7649	138	54	0	0	Pass
7	7561	148	67	0	0	Pass
8	7681	149	65	0	0	Pass
9	7663	133	58	0	0	Pass
10	7662	129	61	0	0	Pass

Cycle DTC rate data

Cycle	Singles	Doubles	Triples	QC Tests
1	126.148	1.367	0.000	Pass
2	124.882	0.633	0.000	Pass
3	125.098	1.133	0.000	Pass
4	125.332	1.350	0.000	Pass
5	121.632	1.217	0.000	Pass
6	125.882	1.400	0.000	Pass
7	124.415	1.350	0.000	Pass
8	126.415	1.400	0.000	Pass
9	126.115	1.250	0.000	Pass
10	126.098	1.133	0.000	Pass

INCC 5.1.2

```
                Facility:  JMOX
  Material balance area:  JM2G
           Detector type:  AFAS
             Detector id:  JSR_01
         Electronics id:  JSR-12
  Inventory change code:
                 I/O code:
       Measurement date:  24.05.01  09:35:02
      Results file name:  451J3502.VER
      Inspection number:
                Item id:  BWR TF
             Stratum id:  XXXX
           Material type:  Pu
 Original declared mass:  0.000
     Measurement option:  Verification
            Data source:  Review disk file
              QC tests:  On
      Error calculation:  Sample method
     Accidentals method:  Measured
         Inspector name:
        Passive comment:

            Isotopics id:  Default
  Isotopics source code:  OD
                  Pu238:    0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu239:    0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                  Pu241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu242:    0.0000 +-   0.0000      0.0000 +-   0.0000
                Pu date:  00.01.01              24.05.01
                  Am241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                Am date:  00.01.01              24.05.01

               Predelay:      1.50
            Gate length:     64.00
        2nd gate length:     64.00
           High voltage:   1720
          Die away time:     50.0000
             Efficiency:      0.0080
  Multiplicity deadtime:      0.0000
 Coefficient A deadtime:      0.0000
 Coefficient B deadtime:      0.0000
 Coefficient C deadtime:      0.0000
  Doubles gate fraction:      0.0001
  Triples gate fraction:      0.0001

 Normalization constant:      1.0000 +-    0.0000

 Passive singles bkgrnd:      0.000 +-     0.000
 Passive doubles bkgrnd:      0.000 +-     0.000
 Passive triples bkgrnd:      0.000 +-     0.000
 Passive scaler1 bkgrnd:      0.000
 Passive scaler2 bkgrnd:      0.000

  Number passive cycles:         10
        Count time (sec):         60
```

Passive error messages

Known alpha analysis error

Results

```
                    Singles:         76.168 +-     0.325
                    Doubles:          0.390 +-     0.030
                    Triples:          0.000 +-     0.000
                   Scaler 1:        130.315 +-     0.404
                   Scaler 2:          0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	4495	49	20	7925	0	Pass
2	4492	45	16	7733	0	Pass
3	4608	38	19	7747	0	Pass
4	4583	42	13	7697	0	Pass
5	4649	52	27	7785	0	Pass
6	4609	41	15	7869	0	Pass
7	4535	45	18	7814	0	Pass
8	4488	37	22	7859	0	Pass
9	4617	41	21	7852	0	Pass
10	4625	41	26	7908	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	74.917	0.483	0.000	0.000	Pass
2	74.867	0.483	0.000	0.000	Pass
3	76.800	0.317	0.000	0.000	Pass
4	76.383	0.483	0.000	0.000	Pass
5	77.483	0.417	0.000	0.000	Pass
6	76.817	0.433	0.000	0.000	Pass
7	75.583	0.450	0.000	0.000	Pass
8	74.800	0.250	0.000	0.000	Pass
9	76.950	0.333	0.000	0.000	Pass
10	77.083	0.250	0.000	0.000	Pass

INCC 5.1.2

```
               Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_01
         Electronics id:  JSR-12
  Inventory change code:
              I/O code:
      Measurement date:  24.05.01  09:48:06
     Results file name:  451J4806.VER
     Inspection number:
               Item id:  BWR COLLAR
            Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
    Measurement option:  Verification
           Data source:  Review disk file
              QC tests:  On
     Error calculation:  Sample method
    Accidentals method:  Measured
        Inspector name:
       Passive comment:

           Isotopics id:  Default
  Isotopics source code:  OD
                  Pu238:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu239:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                  Pu241:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu242:   0.0000 +-   0.0000      0.0000 +-   0.0000
                Pu date:  00.01.01               24.05.01
                  Am241:   0.0000 +-   0.0000      0.0000 +-   0.0000
                Am date:  00.01.01               24.05.01

               Predelay:      1.50
            Gate length:     64.00
        2nd gate length:     64.00
           High voltage:   1720
          Die away time:     50.0000
             Efficiency:      0.1970
  Multiplicity deadtime:    160.0000
 Coefficient A deadtime:      0.6419
 Coefficient B deadtime:      0.1030
 Coefficient C deadtime:      0.0000
  Doubles gate fraction:      0.0001
  Triples gate fraction:      0.0001

 Normalization constant:      1.0000 +-    0.0000

 Passive singles bkgrnd:      0.000 +-     0.000
 Passive doubles bkgrnd:      0.000 +-     0.000
 Passive triples bkgrnd:      0.000 +-     0.000
 Passive scaler1 bkgrnd:      0.000
 Passive scaler2 bkgrnd:      0.000

  Number passive cycles:         10
       Count time (sec):         60

Passive error messages

Known alpha analysis error
```


Results

```
                 Singles:      2468.041 +-     2.565
                 Doubles:       526.483 +-     1.357
                 Triples:         0.000 +-     0.000
                Scaler 1:         9.047 +-     0.139
                Scaler 2:         0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	148118	55018	23579	508	0	Pass
2	147513	54844	23307	540	0	Pass
3	147940	54670	23418	562	0	Pass
4	148526	55168	23512	520	0	Pass
5	148257	55422	23345	563	0	Pass
6	148083	55007	23417	568	0	Pass
7	147038	54773	23149	495	0	Pass
8	147885	54639	23530	559	0	Pass
9	148118	55123	23524	547	0	Pass
10	148760	55510	24003	566	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	2469.612	524.815	0.000	0.000	Pass
2	2459.521	526.447	0.000	0.000	Pass
3	2466.643	521.692	0.000	0.000	Pass
4	2476.417	528.439	0.000	0.000	Pass
5	2471.930	535.466	0.000	0.000	Pass
6	2469.028	527.335	0.000	0.000	Pass
7	2451.598	527.897	0.000	0.000	Pass
8	2465.725	519.305	0.000	0.000	Pass
9	2469.612	527.486	0.000	0.000	Pass
10	2480.320	525.953	0.000	0.000	Pass

INCC 5.1.2

```
               Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_02
         Electronics id:  JSR-12
  Inventory change code:
              I/O code:
      Measurement date:  24.05.01  10:01:34
     Results file name:  451K0134.VER
     Inspection number:
               Item id:  BWR BF
            Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
    Measurement option:  Verification
           Data source:  Review disk file
              QC tests:  On
     Error calculation:  Sample method
    Accidentals method:  Measured
        Inspector name:
       Passive comment:

           Isotopics id:  Default
  Isotopics source code:  OD
                  Pu238:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu239:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                  Pu241:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu242:   0.0000 +-   0.0000      0.0000 +-   0.0000
                Pu date:  00.01.01               24.05.01
                  Am241:   0.0000 +-   0.0000      0.0000 +-   0.0000
                Am date:  00.01.01               24.05.01

               Predelay:      1.50
            Gate length:     64.00
        2nd gate length:     64.00
           High voltage:   1720
          Die away time:     50.0000
             Efficiency:      0.0060
  Multiplicity deadtime:      0.0000
 Coefficient A deadtime:      0.0000
 Coefficient B deadtime:      0.0000
 Coefficient C deadtime:      0.0000
  Doubles gate fraction:      0.0001
  Triples gate fraction:      0.0001

 Normalization constant:      1.0000 +-    0.0000

 Passive singles bkgrnd:      0.000 +-     0.000
 Passive doubles bkgrnd:      0.000 +-     0.000
 Passive triples bkgrnd:      0.000 +-     0.000
 Passive scaler1 bkgrnd:      0.000
 Passive scaler2 bkgrnd:      0.000

  Number passive cycles:         10
       Count time (sec):         60

Passive error messages

No known alpha calibration
```


Results

```
                 Singles:       135.203 +-     0.468
                 Doubles:         1.448 +-     0.081
                 Triples:         0.000 +-     0.000
                Scaler 1:         4.483 +-     0.083
                Scaler 2:         0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	8048	168	76	255	0	Pass
2	8049	159	70	282	0	Pass
3	8102	152	77	286	0	Pass
4	8163	172	86	257	0	Pass
5	8228	187	69	296	0	Pass
6	7917	161	78	282	0	Pass
7	8122	143	77	253	0	Pass
8	8178	167	70	263	0	Pass
9	8159	151	83	258	0	Pass
10	8156	166	71	258	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	134.133	1.533	0.000	0.000	Pass
2	134.150	1.483	0.000	0.000	Pass
3	135.033	1.250	0.000	0.000	Pass
4	136.050	1.433	0.000	0.000	Pass
5	137.133	1.967	0.000	0.000	Pass
6	131.950	1.383	0.000	0.000	Pass
7	135.367	1.100	0.000	0.000	Pass
8	136.300	1.617	0.000	0.000	Pass
9	135.983	1.133	0.000	0.000	Pass
10	135.933	1.583	0.000	0.000	Pass

INCC 5.1.2

```
              Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_02
         Electronics id:  JSR-12
  Inventory change code:
              I/O code:
      Measurement date:  24.05.01  10:15:38
     Results file name:  451K1538.VER
     Inspection number:
               Item id:  PWR TF
            Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
    Measurement option:  Verification
           Data source:  Review disk file
              QC tests:  On
     Error calculation:  Sample method
    Accidentals method:  Measured
        Inspector name:
       Passive comment:

          Isotopics id:  Default
  Isotopics source code:  OD
                 Pu238:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu239:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                 Pu241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu242:    0.0000 +-   0.0000      0.0000 +-   0.0000
               Pu date:  00.01.01                24.05.01
                 Am241:    0.0000 +-   0.0000      0.0000 +-   0.0000
               Am date:  00.01.01                24.05.01

              Predelay:      1.50
          Gate length:      64.00
       2nd gate length:     64.00
         High voltage:    1720
        Die away time:      50.0000
           Efficiency:      0.0126
 Multiplicity deadtime:     0.0000
Coefficient A deadtime:     0.0000
Coefficient B deadtime:     0.0000
Coefficient C deadtime:     0.0000
 Doubles gate fraction:     0.0001
 Triples gate fraction:     0.0001

Normalization constant:     1.0000 +-    0.0000

Passive singles bkgrnd:     0.000 +-     0.000
Passive doubles bkgrnd:     0.000 +-     0.000
Passive triples bkgrnd:     0.000 +-     0.000
Passive scaler1 bkgrnd:     0.000
Passive scaler2 bkgrnd:     0.000

 Number passive cycles:        10
      Count time (sec):        60
```

Passive error messages

No known alpha calibration

Results

```
                 Singles:          2.785 +-     0.060
                 Doubles:          0.000 +-     0.000
                 Triples:          0.000 +-     0.000
                Scaler 1:        117.117 +-     0.436
                Scaler 2:          0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	149	0	0	7007	0	Pass
2	172	0	0	6975	0	Pass
3	171	0	0	7034	0	Pass
4	165	0	0	6991	0	Pass
5	182	0	0	6968	0	Pass
6	150	0	0	7188	0	Pass
7	176	0	0	7097	0	Pass
8	159	0	0	7010	0	Pass
9	168	0	0	6897	0	Pass
10	179	0	0	7103	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	2.483	0.000	0.000	0.000	Pass
2	2.867	0.000	0.000	0.000	Pass
3	2.850	0.000	0.000	0.000	Pass
4	2.750	0.000	0.000	0.000	Pass
5	3.033	0.000	0.000	0.000	Pass
6	2.500	0.000	0.000	0.000	Pass
7	2.933	0.000	0.000	0.000	Pass
8	2.650	0.000	0.000	0.000	Pass
9	2.800	0.000	0.000	0.000	Pass
10	2.983	0.000	0.000	0.000	Pass

INCC 6.23.2.9 HM32 Not Validated

```
                 Facility: PPFF
   Material balance area: XXXX
           Detector type: PASS
             Detector id: AFAS-P TOP
          Electronics id: UDL-1
       Measurement date: 24.05.01     10:19:22
      Results file name: 451K1922.NOR
      Inspection number:
     Measurement option: Normalization
            Data source: IAEA DataZ file
 Detector configuration: Passive
               QC tests: On
     Accidentals method: Measured
         Inspector name:
                Comment:
          Ending comment: xx


              Predelay:      1.500
          Gate length:      64.000
         High voltage:       1720
        Die away time:      50.0000
           Efficiency:      0.0126
 Multiplicity deadtime:     0.0000
Coefficient A deadtime:     0.0000
Coefficient B deadtime:     0.0000
*Coefficient C deadtime:    0.0000
 Doubles gate fraction:     0.0001
 Triples gate fraction:     0.0001

Passive singles bkgrnd:     2.227  +-      0.045
Passive doubles bkgrnd:     0.000  +-      0.000
Passive triples bkgrnd:     0.000  +-      0.000
Passive scaler1 bkgrnd:     0.000
Passive scaler2 bkgrnd:     0.000
     Number of cycles:        10
     Count time (sec):     60.000
```

Summed raw data

```
          Number of good cycles:        10
                Total count time:      600
       Shift register singles sum:     70315
Shift register reals + accidentals sum:  1190
   Shift register accidentals sum:      528
    Shift register 1st scaler sum:        0
    Shift register 2nd scaler sum:        0
```

Summed multiplicity distributions

R+A sums A sums

Messages

Normalization test -- data quality is inadequate

Results

```
                 Singles:    114.965  +-      0.392
                 Doubles:      1.103  +-      0.050
                 Triples:      0.000  +-      0.000
```



```
                Scaler 1:      0.000  +-      0.000
                Scaler 2:      0.000  +-      0.000
```

Normalization results for reference source: H4-694

```
      Current normalization constant:      1.000  +-      0.000
         Cf252 expected singles rate:    114.188  +-      0.255
         Cf252 measured singles rate:    114.965  +-      0.392
      Singles rate expected/measured:      0.993  +-      0.040
          New normalization constant:      1.000  +-      0.000
              Normalization test  --  data quality is inadequate.
```

Cycle raw data

Count time (sec): 60.000

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	6964	126	45	0	0	Pass
2	7017	127	52	0	0	Pass
3	7029	124	59	0	0	Pass
4	6945	99	43	0	0	Pass
5	7041	110	58	0	0	Pass
6	7157	123	53	0	0	Pass
7	7089	113	58	0	0	Pass
8	6995	122	57	0	0	Pass
9	6949	123	54	0	0	Pass
10	7129	123	49	0	0	Pass

Cycle DTC rate data

Cycle	Singles	Doubles	Triples	QC Tests
1	113.840	1.350	0.000	Pass
2	114.723	1.250	0.000	Pass
3	114.923	1.083	0.000	Pass
4	113.523	0.933	0.000	Pass
5	115.123	0.867	0.000	Pass
6	117.057	1.167	0.000	Pass
7	115.923	0.917	0.000	Pass
8	114.357	1.083	0.000	Pass
9	113.590	1.150	0.000	Pass
10	116.590	1.233	0.000	Pass

INCC 5.1.2

```
              Facility:  JMOX
  Material balance area:  JM2G
         Detector type:  AFAS
           Detector id:  JSR_03
        Electronics id:  JSR-12
  Inventory change code:
              I/O code:
      Measurement date:  24.05.01  10:31:13
     Results file name:  451K3113.VER
      Inspection number:
               Item id:  PWR COLLAR
            Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
    Measurement option:  Verification
           Data source:  Review disk file
              QC tests:  On
     Error calculation:  Sample method
    Accidentals method:  Measured
        Inspector name:
       Passive comment:

          Isotopics id:  Default
  Isotopics source code:  OD
                 Pu238:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu239:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                 Pu241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu242:    0.0000 +-   0.0000      0.0000 +-   0.0000
               Pu date:  00.01.01                24.05.01
                 Am241:    0.0000 +-   0.0000      0.0000 +-   0.0000
               Am date:  00.01.01                24.05.01

               Predelay:      1.50
            Gate length:     64.00
        2nd gate length:     64.00
          High voltage:   1720
         Die away time:     50.0000
            Efficiency:      0.1620
  Multiplicity deadtime:    86.5000
 Coefficient A deadtime:     0.3458
 Coefficient B deadtime:     0.0299
 Coefficient C deadtime:     0.0000
  Doubles gate fraction:     0.0001
  Triples gate fraction:     0.0001

 Normalization constant:     1.0000 +-    0.0000

 Passive singles bkgrnd:     0.000 +-     0.000
 Passive doubles bkgrnd:     0.000 +-     0.000
 Passive triples bkgrnd:     0.000 +-     0.000
 Passive scaler1 bkgrnd:     0.000
 Passive scaler2 bkgrnd:     0.000

  Number passive cycles:        10
       Count time (sec):        60

Passive error messages

No passive calibration curve calibration
No known alpha calibration
```


Results

```
                 Singles:      2020.294 +-     2.496
                 Doubles:       345.106 +-     1.782
                 Triples:         0.000 +-     0.000
                Scaler 1:        17.870 +-     0.197
                Scaler 2:         0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	121493	36521	15660	1066	0	Pass
2	121228	36726	15670	1056	0	Pass
3	121822	36852	15942	1036	0	Pass
4	120641	35866	15475	1077	0	Pass
5	120796	36188	15428	1027	0	Pass
6	120577	35452	15408	1115	0	Pass
7	121716	36773	15607	1122	0	Pass
8	121236	36588	15856	1093	0	Pass
9	121681	36669	16206	1110	0	Pass
10	120775	36103	15567	1020	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	2025.238	347.927	0.000	0.000	Pass
2	2020.820	351.179	0.000	0.000	Pass
3	2030.723	348.745	0.000	0.000	Pass
4	2011.033	340.086	0.000	0.000	Pass
5	2013.617	346.241	0.000	0.000	Pass
6	2009.966	334.299	0.000	0.000	Pass
7	2028.956	353.014	0.000	0.000	Pass
8	2020.953	345.775	0.000	0.000	Pass
9	2028.372	341.289	0.000	0.000	Pass
10	2013.267	342.505	0.000	0.000	Pass

INCC 6.23.2.9 HM32 Not Validated

```
                 Facility: PPFF
   Material balance area: XXXX
          Detector type: PASS
            Detector id: AFAS-P COLLAR
         Electronics id: UDL-1
       Measurement date: 24.05.01     10:33:57
      Results file name: 451K3357.NOR
       Inspection number:
      Measurement option: Normalization
            Data source: IAEA DataZ file
 Detector configuration: Passive
               QC tests: On
     Accidentals method: Measured
         Inspector name:
                Comment:
          Ending comment: xx


               Predelay:      1.500
            Gate length:     64.000
           High voltage:       1720
          Die away time:    50.0000
              Efficiency:     0.1620
   Multiplicity deadtime:    86.5000
  Coefficient A deadtime:     0.3458
  Coefficient B deadtime:     0.0299
 *Coefficient C deadtime:     0.0000
   Doubles gate fraction:     0.0001
   Triples gate fraction:     0.0001

  Passive singles bkgrnd:    15.100  +-      0.169
  Passive doubles bkgrnd:     0.002  +-      0.014
  Passive triples bkgrnd:     0.000  +-      0.000
  Passive scaler1 bkgrnd:     0.000
  Passive scaler2 bkgrnd:     0.000
        Number of cycles:        10
        Count time (sec):    60.000
```

Summed raw data

```
              Number of good cycles:        10
                   Total count time:       600
         Shift register singles sum:   1212203
Shift register reals + accidentals sum:   364515
      Shift register accidentals sum:    157100
       Shift register 1st scaler sum:         0
       Shift register 2nd scaler sum:         0
```

Summed multiplicity distributions

```
        R+A sums       A sums
```

Messages

Normalization test -- data quality is inadequate

Results

```
                 Singles:   2005.591  +-      2.337
                 Doubles:    345.932  +-      2.098
                 Triples:      0.000  +-      0.000
```



```
                Scaler 1:      0.000  +-      0.000
                Scaler 2:      0.000  +-      0.000
```

Normalization results for reference source: H4-694

```
        Current normalization constant:      1.000  +-      0.000
           Cf252 expected doubles rate:    338.500  +-      0.514
           Cf252 measured doubles rate:    345.932  +-      2.098
        Doubles rate expected/measured:      0.979  +-      0.006
            New normalization constant:      1.000  +-      0.000
                Normalization test  --  data quality is inadequate.
            Measured percent precision:      0.606
            Required percent precision:      0.300
       Repeat measurement for at least:      0.000
```

Cycle raw data

Count time (sec): 60.000

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	121414	36444	15844	0	0	Pass
2	121376	36643	15983	0	0	Pass
3	121555	36912	15829	0	0	Pass
4	121331	36619	15749	0	0	Pass
5	120753	36066	15538	0	0	Pass
6	120651	36102	15511	0	0	Pass
7	120504	35558	15514	0	0	Pass
8	121824	36976	15558	0	0	Pass
9	121185	36456	15993	0	0	Pass
10	121610	36739	15581	0	0	Pass

Cycle DTC rate data

Cycle	Singles	Doubles	Triples	QC Tests
1	2008.821	343.572	0.000	Pass
2	2008.187	344.573	0.000	Pass
3	2011.172	351.628	0.000	Pass
4	2007.437	348.075	0.000	Pass
5	1997.800	342.370	0.000	Pass
6	1996.100	343.420	0.000	Pass
7	1993.649	334.297	0.000	Pass
8	2015.656	357.216	0.000	Pass
9	2005.003	341.287	0.000	Pass
10	2012.089	352.879	0.000	Pass

INCC 5.1.2

```
               Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_03
         Electronics id:  JSR-12
  Inventory change code:
              I/O code:
      Measurement date:  24.05.01  10:51:19
     Results file name:  451K5119.VER
     Inspection number:
               Item id:  PWR BF
            Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
    Measurement option:  Verification
           Data source:  Review disk file
              QC tests:  On
     Error calculation:  Sample method
    Accidentals method:  Measured
        Inspector name:
       Passive comment:

          Isotopics id:  Default
  Isotopics source code:  OD
                 Pu238:   0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu239:   0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                 Pu241:   0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu242:   0.0000 +-   0.0000      0.0000 +-   0.0000
               Pu date:  00.01.01               24.05.01
                 Am241:   0.0000 +-   0.0000      0.0000 +-   0.0000
               Am date:  00.01.01               24.05.01

              Predelay:      1.50
          Gate length:     64.00
       2nd gate length:     64.00
         High voltage:   1720
        Die away time:     50.0000
           Efficiency:      0.0127
 Multiplicity deadtime:     0.0000
Coefficient A deadtime:     0.0000
Coefficient B deadtime:     0.0000
Coefficient C deadtime:     0.0000
 Doubles gate fraction:     0.0001
 Triples gate fraction:     0.0001

Normalization constant:     1.0000 +-    0.0000

Passive singles bkgrnd:     0.000 +-     0.000
Passive doubles bkgrnd:     0.000 +-     0.000
Passive triples bkgrnd:     0.000 +-     0.000
Passive scaler1 bkgrnd:     0.000
Passive scaler2 bkgrnd:     0.000

 Number passive cycles:        10
      Count time (sec):        60
```

Passive error messages

No passive calibration curve calibration
No known alpha calibration

Results

```
                 Singles:      175.655 +-     0.414
                 Doubles:        1.998 +-     0.069
                 Triples:        0.000 +-     0.000
                Scaler 1:      125.293 +-     0.549
                Scaler 2:        0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	10657	256	132	7534	0	Pass
2	10576	220	118	7733	0	Pass
3	10551	242	124	7445	0	Pass
4	10486	213	112	7547	0	Pass
5	10575	232	112	7480	0	Pass
6	10557	257	117	7379	0	Pass
7	10601	249	129	7453	0	Pass
8	10504	265	125	7645	0	Pass
9	10521	246	130	7501	0	Pass
10	10365	242	124	7459	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	177.617	2.067	0.000	0.000	Pass
2	176.267	1.700	0.000	0.000	Pass
3	175.850	1.967	0.000	0.000	Pass
4	174.767	1.683	0.000	0.000	Pass
5	176.250	2.000	0.000	0.000	Pass
6	175.950	2.333	0.000	0.000	Pass
7	176.683	2.000	0.000	0.000	Pass
8	175.067	2.333	0.000	0.000	Pass
9	175.350	1.933	0.000	0.000	Pass
10	172.750	1.967	0.000	0.000	Pass

INCC 6.23.2.9 HM32 Not Validated

```
                 Facility: PPFF
     Material balance area: XXXX
             Detector type: UDL-1
               Detector id: AFAS-P BOTTOM
          Electronics id: PASS
       Measurement date: 24.05.01     10:51:04
      Results file name: 451K5104.NOR
       Inspection number:
      Measurement option: Normalization
             Data source: IAEA DataZ file
  Detector configuration: Passive
               QC tests: On
      Accidentals method: Measured
          Inspector name:
                 Comment:
          Ending comment: xx


              Predelay:      1.500
          Gate length:     64.000
         High voltage:       1720
        Die away time:    50.0000
           Efficiency:     0.0127
 Multiplicity deadtime:     0.0000
Coefficient A deadtime:     0.0000
Coefficient B deadtime:     0.0000
*Coefficient C deadtime:    0.0000
 Doubles gate fraction:     0.0001
 Triples gate fraction:     0.0001

Passive singles bkgrnd:      1.618  +-      0.065
Passive doubles bkgrnd:      0.000  +-      0.000
Passive triples bkgrnd:      0.000  +-      0.000
Passive scaler1 bkgrnd:      0.000
Passive scaler2 bkgrnd:      0.000
      Number of cycles:        10
      Count time (sec):    60.000
```

Summed raw data

```
          Number of good cycles:        10
                Total count time:       600
       Shift register singles sum:     75160
Shift register reals + accidentals sum:  1344
     Shift register accidentals sum:     603
      Shift register 1st scaler sum:       0
      Shift register 2nd scaler sum:       0
```

Summed multiplicity distributions

R+A sums A sums

Messages

Normalization test -- data quality is inadequate

Results

```
                 Singles:    123.648  +-      0.432
                 Doubles:      1.235  +-      0.066
                 Triples:      0.000  +-      0.000
```



```
                Scaler 1:      0.000  +-      0.000
                Scaler 2:      0.000  +-      0.000
```

Normalization results for reference source: H4-694

```
        Current normalization constant:      1.000  +-      0.000
           Cf252 expected singles rate:    122.378  +-      0.201
           Cf252 measured singles rate:    123.648  +-      0.432
        Singles rate expected/measured:      0.990  +-      0.040
            New normalization constant:      1.000  +-      0.000
                Normalization test  --  data quality is inadequate.
```

Cycle raw data

Count time (sec): 60.000

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	7454	141	49	0	0	Pass
2	7457	130	49	0	0	Pass
3	7606	127	61	0	0	Pass
4	7463	129	66	0	0	Pass
5	7647	154	62	0	0	Pass
6	7625	119	50	0	0	Pass
7	7515	122	66	0	0	Pass
8	7506	141	58	0	0	Pass
9	7468	140	66	0	0	Pass
10	7419	141	76	0	0	Pass

Cycle DTC rate data

Cycle	Singles	Doubles	Triples	QC Tests
1	122.615	1.533	0.000	Pass
2	122.665	1.350	0.000	Pass
3	125.148	1.100	0.000	Pass
4	122.765	1.050	0.000	Pass
5	125.832	1.533	0.000	Pass
6	125.465	1.150	0.000	Pass
7	123.632	0.933	0.000	Pass
8	123.482	1.383	0.000	Pass
9	122.848	1.233	0.000	Pass
10	122.032	1.083	0.000	Pass

INCC 5.1.2

```
               Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_01
         Electronics id:  JSR-12
  Inventory change code:
               I/O code:
      Measurement date:  24.06.05  11:03:30
     Results file name:  465L0330.VER
     Inspection number:
               Item id:  BWR TF
            Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
    Measurement option:  Verification
           Data source:  Review disk file
              QC tests:  On
     Error calculation:  Sample method
    Accidentals method:  Measured
        Inspector name:
       Passive comment:

           Isotopics id:  Default
  Isotopics source code:  OD
                  Pu238:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu239:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                  Pu241:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu242:   0.0000 +-   0.0000      0.0000 +-   0.0000
                Pu date:  00.01.01               24.06.05
                  Am241:   0.0000 +-   0.0000      0.0000 +-   0.0000
                Am date:  00.01.01               24.06.05

               Predelay:      1.50
           Gate length:     64.00
        2nd gate length:     64.00
          High voltage:   1720
         Die away time:     50.0000
            Efficiency:      0.0080
  Multiplicity deadtime:     0.0000
 Coefficient A deadtime:     0.0000
 Coefficient B deadtime:     0.0000
 Coefficient C deadtime:     0.0000
  Doubles gate fraction:     0.0001
  Triples gate fraction:     0.0001

 Normalization constant:     1.0000 +-    0.0000

 Passive singles bkgrnd:     0.000 +-     0.000
 Passive doubles bkgrnd:     0.000 +-     0.000
 Passive triples bkgrnd:     0.000 +-     0.000
 Passive scaler1 bkgrnd:     0.000
 Passive scaler2 bkgrnd:     0.000

  Number passive cycles:        10
       Count time (sec):        60

Passive error messages

Known alpha analysis error
```


Results

```
                 Singles:        74.075 +-     0.448
                 Doubles:         0.380 +-     0.022
                 Triples:         0.000 +-     0.000
                Scaler 1:       126.635 +-     0.495
                Scaler 2:         0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	4346	37	19	7545	0	Pass
2	4417	52	27	7683	0	Pass
3	4410	46	22	7639	0	Pass
4	4495	45	20	7743	0	Pass
5	4404	42	18	7527	0	Pass
6	4443	32	17	7460	0	Pass
7	4551	48	22	7663	0	Pass
8	4572	49	31	7556	0	Pass
9	4499	49	23	7672	0	Pass
10	4308	45	18	7493	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	72.433	0.300	0.000	0.000	Pass
2	73.617	0.417	0.000	0.000	Pass
3	73.500	0.400	0.000	0.000	Pass
4	74.917	0.417	0.000	0.000	Pass
5	73.400	0.400	0.000	0.000	Pass
6	74.050	0.250	0.000	0.000	Pass
7	75.850	0.433	0.000	0.000	Pass
8	76.200	0.300	0.000	0.000	Pass
9	74.983	0.433	0.000	0.000	Pass
10	71.800	0.450	0.000	0.000	Pass

INCC 5.1.2

```
               Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_01
         Electronics id:  JSR-12
  Inventory change code:
               I/O code:
      Measurement date:  24.06.05  11:17:34
     Results file name:  465L1734.VER
     Inspection number:
               Item id:  BWR COLLAR
            Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
    Measurement option:  Verification
           Data source:  Review disk file
              QC tests:  On
     Error calculation:  Sample method
    Accidentals method:  Measured
        Inspector name:
       Passive comment:

           Isotopics id:  Default
  Isotopics source code:  OD
                  Pu238:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu239:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                  Pu241:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu242:   0.0000 +-   0.0000      0.0000 +-   0.0000
                Pu date:  00.01.01               24.06.05
                  Am241:   0.0000 +-   0.0000      0.0000 +-   0.0000
                Am date:  00.01.01               24.06.05

               Predelay:      1.50
           Gate length:     64.00
        2nd gate length:     64.00
          High voltage:   1720
         Die away time:     50.0000
            Efficiency:      0.1970
  Multiplicity deadtime:    160.0000
 Coefficient A deadtime:     0.6419
 Coefficient B deadtime:     0.1030
 Coefficient C deadtime:     0.0000
  Doubles gate fraction:     0.0001
  Triples gate fraction:     0.0001

 Normalization constant:     1.0000 +-    0.0000

 Passive singles bkgrnd:     0.000 +-     0.000
 Passive doubles bkgrnd:     0.000 +-     0.000
 Passive triples bkgrnd:     0.000 +-     0.000
 Passive scaler1 bkgrnd:     0.000
 Passive scaler2 bkgrnd:     0.000

  Number passive cycles:        10
       Count time (sec):        60

Passive error messages

Known alpha analysis error
```


Results

```
                 Singles:      2409.878 +-     1.977
                 Doubles:       514.217 +-     1.957
                 Triples:         0.000 +-     0.000
                Scaler 1:         9.028 +-     0.109
                Scaler 2:         0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	144523	53312	22307	515	0	Pass
2	144905	53752	22329	563	0	Pass
3	144753	53092	22746	534	0	Pass
4	143839	52519	22156	556	0	Pass
5	144222	52933	22044	547	0	Pass
6	144867	53414	22225	526	0	Pass
7	145039	53214	22673	521	0	Pass
8	144219	52548	22089	522	0	Pass
9	144377	52827	22048	559	0	Pass
10	144624	53072	22013	574	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	2409.648	517.550	0.000	0.000	Pass
2	2416.020	524.529	0.000	0.000	Pass
3	2413.485	506.551	0.000	0.000	Pass
4	2398.239	506.830	0.000	0.000	Pass
5	2404.628	515.612	0.000	0.000	Pass
6	2415.386	520.623	0.000	0.000	Pass
7	2418.255	509.807	0.000	0.000	Pass
8	2404.578	508.434	0.000	0.000	Pass
9	2407.213	513.777	0.000	0.000	Pass
10	2411.333	518.452	0.000	0.000	Pass

INCC 5.1.2

```
               Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_02
         Electronics id:  JSR-12
  Inventory change code:
               I/O code:
      Measurement date:  24.06.05  11:33:41
     Results file name:  465L3341.VER
     Inspection number:
               Item id:  BWR BF
            Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
    Measurement option:  Verification
           Data source:  Review disk file
              QC tests:  On
     Error calculation:  Sample method
    Accidentals method:  Measured
        Inspector name:
       Passive comment:

           Isotopics id:  Default
  Isotopics source code:  OD
                  Pu238:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu239:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                  Pu241:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu242:   0.0000 +-   0.0000      0.0000 +-   0.0000
                Pu date:  00.01.01               24.06.05
                  Am241:   0.0000 +-   0.0000      0.0000 +-   0.0000
                Am date:  00.01.01               24.06.05

               Predelay:      1.50
            Gate length:     64.00
        2nd gate length:     64.00
           High voltage:   1720
          Die away time:     50.0000
             Efficiency:      0.0060
  Multiplicity deadtime:      0.0000
 Coefficient A deadtime:      0.0000
 Coefficient B deadtime:      0.0000
 Coefficient C deadtime:      0.0000
  Doubles gate fraction:      0.0001
  Triples gate fraction:      0.0001

 Normalization constant:      1.0000 +-    0.0000

 Passive singles bkgrnd:      0.000 +-     0.000
 Passive doubles bkgrnd:      0.000 +-     0.000
 Passive triples bkgrnd:      0.000 +-     0.000
 Passive scaler1 bkgrnd:      0.000
 Passive scaler2 bkgrnd:      0.000

  Number passive cycles:         10
       Count time (sec):         60

Passive error messages

No known alpha calibration
```


Results

```
                 Singles:      132.170 +-     0.299
                 Doubles:        1.433 +-     0.052
                 Triples:        0.000 +-     0.000
                Scaler 1:        4.447 +-     0.073
                Scaler 2:        0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	7921	175	88	287	0	Pass
2	7863	154	67	273	0	Pass
3	7858	162	59	261	0	Pass
4	8006	161	87	240	0	Pass
5	7967	149	59	272	0	Pass
6	7891	148	70	274	0	Pass
7	7927	158	63	272	0	Pass
8	7916	167	73	274	0	Pass
9	7922	139	60	267	0	Pass
10	8031	139	66	248	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	132.017	1.450	0.000	0.000	Pass
2	131.050	1.450	0.000	0.000	Pass
3	130.967	1.717	0.000	0.000	Pass
4	133.433	1.233	0.000	0.000	Pass
5	132.783	1.500	0.000	0.000	Pass
6	131.517	1.300	0.000	0.000	Pass
7	132.117	1.583	0.000	0.000	Pass
8	131.933	1.567	0.000	0.000	Pass
9	132.033	1.317	0.000	0.000	Pass
10	133.850	1.217	0.000	0.000	Pass

INCC 5.1.2

```
               Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_02
         Electronics id:  JSR-12
  Inventory change code:
               I/O code:
      Measurement date:  24.06.05  13:26:11
     Results file name:  465N2611.VER
     Inspection number:
               Item id:  PWR TF
            Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
    Measurement option:  Verification
           Data source:  Review disk file
              QC tests:  On
     Error calculation:  Sample method
    Accidentals method:  Measured
        Inspector name:
       Passive comment:

           Isotopics id:  Default
  Isotopics source code:  OD
                  Pu238:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu239:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                  Pu241:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu242:   0.0000 +-   0.0000      0.0000 +-   0.0000
                Pu date:  00.01.01               24.06.05
                  Am241:   0.0000 +-   0.0000      0.0000 +-   0.0000
                Am date:  00.01.01               24.06.05

               Predelay:      1.50
            Gate length:     64.00
        2nd gate length:     64.00
           High voltage:   1720
          Die away time:     50.0000
             Efficiency:      0.0126
  Multiplicity deadtime:      0.0000
 Coefficient A deadtime:      0.0000
 Coefficient B deadtime:      0.0000
 Coefficient C deadtime:      0.0000
  Doubles gate fraction:      0.0001
  Triples gate fraction:      0.0001

 Normalization constant:      1.0000 +-    0.0000

 Passive singles bkgrnd:      0.000 +-     0.000
 Passive doubles bkgrnd:      0.000 +-     0.000
 Passive triples bkgrnd:      0.000 +-     0.000
 Passive scaler1 bkgrnd:      0.000
 Passive scaler2 bkgrnd:      0.000

  Number passive cycles:         10
       Count time (sec):         60

Passive error messages

No known alpha calibration
```


Results

```
                 Singles:        2.737 +-     0.079
                 Doubles:        0.000 +-     0.000
                 Triples:        0.000 +-     0.000
                Scaler 1:      113.997 +-     0.456
                Scaler 2:        0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	143	0	0	6811	0	Pass
2	167	0	0	6740	0	Pass
3	160	0	0	6804	0	Pass
4	146	0	0	6845	0	Pass
5	172	0	0	6947	0	Pass
6	161	0	0	6965	0	Pass
7	183	0	0	6739	0	Pass
8	185	0	0	6904	0	Pass
9	149	0	0	6740	0	Pass
10	176	0	0	6903	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	2.383	0.000	0.000	0.000	Pass
2	2.783	0.000	0.000	0.000	Pass
3	2.667	0.000	0.000	0.000	Pass
4	2.433	0.000	0.000	0.000	Pass
5	2.867	0.000	0.000	0.000	Pass
6	2.683	0.000	0.000	0.000	Pass
7	3.050	0.000	0.000	0.000	Pass
8	3.083	0.000	0.000	0.000	Pass
9	2.483	0.000	0.000	0.000	Pass
10	2.933	0.000	0.000	0.000	Pass

INCC 6.23.2.9 HM32 Not Validated

```
                  Facility: PPFF
      Material balance area: XXXX
             Detector type: PASS
               Detector id: AFAS-P TOP
            Electronics id: UDL-1
          Measurement date: 24.06.05     13:30:06
         Results file name: 465N3006.NOR
          Inspection number:
        Measurement option: Normalization
               Data source: IAEA DataZ file
     Detector configuration: Passive
                 QC tests: On
       Accidentals method: Measured
           Inspector name:
                  Comment:
           Ending comment: xx


                 Predelay:      1.500
              Gate length:     64.000
             High voltage:       1720
            Die away time:    50.0000
               Efficiency:     0.0126
     Multiplicity deadtime:     0.0000
    Coefficient A deadtime:     0.0000
    Coefficient B deadtime:     0.0000
   *Coefficient C deadtime:     0.0000
     Doubles gate fraction:     0.0001
     Triples gate fraction:     0.0001

    Passive singles bkgrnd:      2.025  +-      0.055
    Passive doubles bkgrnd:      0.000  +-      0.000
    Passive triples bkgrnd:      0.000  +-      0.000
    Passive scaler1 bkgrnd:      0.000
    Passive scaler2 bkgrnd:      0.000
          Number of cycles:         10
          Count time (sec):     60.000
```

Summed raw data

```
                Number of good cycles:         10
                    Total count time:        600
           Shift register singles sum:      68442
Shift register reals + accidentals sum:       1191
       Shift register accidentals sum:        506
        Shift register 1st scaler sum:          0
        Shift register 2nd scaler sum:          0
```

Summed multiplicity distributions

```
         R+A sums       A sums
```

Messages

Normalization test -- data quality is inadequate

Results

```
                          Singles:    112.045  +-      0.592
                          Doubles:      1.142  +-      0.091
                          Triples:      0.000  +-      0.000
```



```
                          Scaler 1:      0.000  +-      0.000
                          Scaler 2:      0.000  +-      0.000
```

Normalization results for reference source: H4-694

```
         Current normalization constant:      1.000  +-      0.000
            Cf252 expected singles rate:    111.346  +-      0.249
            Cf252 measured singles rate:    112.045  +-      0.592
         Singles rate expected/measured:      0.994  +-      0.040
             New normalization constant:      1.000  +-      0.000
                 Normalization test  --  data quality is inadequate.
```

Cycle raw data

Count time (sec): 60.000

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	6996	135	49	0	0	Pass
2	6774	102	64	0	0	Pass
3	6801	125	32	0	0	Pass
4	6747	114	53	0	0	Pass
5	6886	126	47	0	0	Pass
6	6939	126	57	0	0	Pass
7	6951	130	50	0	0	Pass
8	6709	111	48	0	0	Pass
9	6945	109	63	0	0	Pass
10	6694	113	43	0	0	Pass

Cycle DTC rate data

Cycle	Singles	Doubles	Triples	QC Tests
1	114.575	1.433	0.000	Pass
2	110.875	0.633	0.000	Pass
3	111.325	1.550	0.000	Pass
4	110.425	1.017	0.000	Pass
5	112.742	1.317	0.000	Pass
6	113.625	1.150	0.000	Pass
7	113.825	1.333	0.000	Pass
8	109.792	1.050	0.000	Pass
9	113.725	0.767	0.000	Pass
10	109.542	1.167	0.000	Pass

INCC 5.1.2

```
              Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_03
         Electronics id:  JSR-12
  Inventory change code:
               I/O code:
       Measurement date:  24.06.05  13:41:17
      Results file name:  465N4117.VER
      Inspection number:
                Item id:  PWR COLLAR
             Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
     Measurement option:  Verification
            Data source:  Review disk file
              QC tests:  On
      Error calculation:  Sample method
     Accidentals method:  Measured
         Inspector name:
        Passive comment:

           Isotopics id:  Default
  Isotopics source code:  OD
                 Pu238:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu239:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                 Pu241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu242:    0.0000 +-   0.0000      0.0000 +-   0.0000
               Pu date:  00.01.01              24.06.05
                 Am241:    0.0000 +-   0.0000      0.0000 +-   0.0000
               Am date:  00.01.01              24.06.05

               Predelay:      1.50
            Gate length:     64.00
        2nd gate length:     64.00
           High voltage:   1720
          Die away time:     50.0000
             Efficiency:      0.1620
  Multiplicity deadtime:     86.5000
 Coefficient A deadtime:      0.3458
 Coefficient B deadtime:      0.0299
 Coefficient C deadtime:      0.0000
  Doubles gate fraction:      0.0001
  Triples gate fraction:      0.0001

 Normalization constant:      1.0000 +-    0.0000

 Passive singles bkgrnd:      0.000 +-     0.000
 Passive doubles bkgrnd:      0.000 +-     0.000
 Passive triples bkgrnd:      0.000 +-     0.000
 Passive scaler1 bkgrnd:      0.000
 Passive scaler2 bkgrnd:      0.000

  Number passive cycles:         10
        Count time (sec):        60
```

Passive error messages

No passive calibration curve calibration
No known alpha calibration

Results

```
                          Singles:     1968.762 +-     1.876
                          Doubles:      336.050 +-     1.821
                          Triples:        0.000 +-     0.000
                         Scaler 1:       17.335 +-     0.143
                         Scaler 2:        0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	117942	34793	14686	1035	0	Pass
2	117849	35280	14710	1017	0	Pass
3	117761	34832	14879	1052	0	Pass
4	118435	35800	15064	1067	0	Pass
5	118300	35080	15002	1029	0	Pass
6	117854	34754	14654	1010	0	Pass
7	118807	35345	14965	1050	0	Pass
8	118078	34973	14767	1091	0	Pass
9	118339	34741	14990	1048	0	Pass
10	117691	34531	14919	1002	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	1966.034	335.345	0.000	0.000	Pass
2	1964.484	343.066	0.000	0.000	Pass
3	1963.016	332.776	0.000	0.000	Pass
4	1974.254	345.836	0.000	0.000	Pass
5	1972.003	334.862	0.000	0.000	Pass
6	1964.567	335.228	0.000	0.000	Pass
7	1980.456	339.899	0.000	0.000	Pass
8	1968.302	336.996	0.000	0.000	Pass
9	1972.653	329.408	0.000	0.000	Pass
10	1961.849	327.088	0.000	0.000	Pass

```
INCC 6.23.2.9 HM32 Not Validated

                  Facility: PPFF
      Material balance area: XXXX
             Detector type: PASS
               Detector id: AFAS-P COLLAR
            Electronics id: UDL-1
          Measurement date: 24.06.05     13:48:42
         Results file name: 465N4842.NOR
         Inspection number:
        Measurement option: Normalization
               Data source: IAEA DataZ file
     Detector configuration: Passive
                 QC tests: On
       Accidentals method: Measured
           Inspector name:
                  Comment:
           Ending comment: xx


                 Predelay:      1.500
              Gate length:     64.000
             High voltage:       1720
             Die away time:    50.0000
                Efficiency:     0.1620
      Multiplicity deadtime:    86.5000
     Coefficient A deadtime:     0.3458
     Coefficient B deadtime:     0.0299
    *Coefficient C deadtime:     0.0000
      Doubles gate fraction:     0.0001
      Triples gate fraction:     0.0001

     Passive singles bkgrnd:     13.737  +-      0.206
     Passive doubles bkgrnd:      0.013  +-      0.008
     Passive triples bkgrnd:      0.000  +-      0.000
     Passive scaler1 bkgrnd:      0.000
     Passive scaler2 bkgrnd:      0.000
          Number of cycles:         10
          Count time (sec):     60.000

Summed raw data

                Number of good cycles:         10
                    Total count time:        600
           Shift register singles sum:    1182508
Shift register reals + accidentals sum:    351352
       Shift register accidentals sum:    149245
        Shift register 1st scaler sum:         0
        Shift register 2nd scaler sum:         0

Summed multiplicity distributions

         R+A sums       A sums

Messages

Normalization test -- data quality is inadequate

Results

                                Singles:   1957.446  +-      1.745
                                Doubles:    337.061  +-      1.822
                                Triples:      0.000  +-      0.000
```

(1)


```
                                Scaler 1:      0.000  +-      0.000
                                Scaler 2:      0.000  +-      0.000

Normalization results for reference source: H4-694

          Current normalization constant:      1.000  +-      0.000
             Cf252 expected doubles rate:    330.073  +-      0.501
             Cf252 measured doubles rate:    337.061  +-      1.822
          Doubles rate expected/measured:      0.979  +-      0.005
              New normalization constant:      1.000  +-      0.000
                  Normalization test  --  data quality is inadequate.
              Measured percent precision:      0.540
              Required percent precision:      0.300
         Repeat measurement for at least:      0.000

Cycle raw data

Count time (sec):      60.000

Cycle   Singles      R+A        A        Scaler1    Scaler2  QC Tests
   1     118185     35620     14824          0          0 Pass
   2     118449     35549     14907          0          0 Pass
   3     117717     34808     14656          0          0 Pass
   4     118894     35287     15109          0          0 Pass
   5     118350     35253     15157          0          0 Pass
   6     117891     34424     14904          0          0 Pass
   7     118129     34872     14802          0          0 Pass
   8     118124     35045     14686          0          0 Pass
   9     118274     35230     15067          0          0 Pass
  10     118495     35264     15133          0          0 Pass

Cycle DTC rate data

Cycle      Singles       Doubles       Triples  QC Tests
   1      1956.349       346.823         0.000  Pass
   2      1960.750       344.255         0.000  Pass
   3      1948.546       336.081         0.000  Pass
   4      1968.170       336.517         0.000  Pass
   5      1959.100       335.149         0.000  Pass
   6      1951.447       325.541         0.000  Pass
   7      1955.415       334.715         0.000  Pass
   8      1955.332       339.534         0.000  Pass
   9      1957.833       336.266         0.000  Pass
  10      1961.517       335.733         0.000  Pass
```

(2)


```
INCC 5.1.2

               Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_03
         Electronics id:  JSR-12
  Inventory change code:
               I/O code:
       Measurement date:  24.06.05  13:55:20
      Results file name:  465N5520.VER
      Inspection number:
                Item id:  PWR BF
             Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
     Measurement option:  Verification
            Data source:  Review disk file
               QC tests:  On
      Error calculation:  Sample method
     Accidentals method:  Measured
         Inspector name:
        Passive comment:

           Isotopics id:  Default
  Isotopics source code:  OD
                 Pu238:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu239:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                 Pu241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu242:    0.0000 +-   0.0000      0.0000 +-   0.0000
               Pu date:  00.01.01                24.06.05
                 Am241:    0.0000 +-   0.0000      0.0000 +-   0.0000
               Am date:  00.01.01                24.06.05

              Predelay:      1.50
           Gate length:     64.00
       2nd gate length:     64.00
          High voltage:   1720
           Die away time:     50.0000
             Efficiency:      0.0127
  Multiplicity deadtime:      0.0000
 Coefficient A deadtime:      0.0000
 Coefficient B deadtime:      0.0000
 Coefficient C deadtime:      0.0000
  Doubles gate fraction:      0.0001
  Triples gate fraction:      0.0001

 Normalization constant:      1.0000 +-    0.0000

 Passive singles bkgrnd:      0.000 +-     0.000
 Passive doubles bkgrnd:      0.000 +-     0.000
 Passive triples bkgrnd:      0.000 +-     0.000
 Passive scaler1 bkgrnd:      0.000
 Passive scaler2 bkgrnd:      0.000

  Number passive cycles:         10
       Count time (sec):         60

Passive error messages

No passive calibration curve calibration
No known alpha calibration
```

(1)


```
Results

                                Singles:       171.620 +-     0.623
                                Doubles:         2.055 +-     0.073
                                Triples:         0.000 +-     0.000
                               Scaler 1:       122.457 +-     0.646
                               Scaler 2:         0.000 +-     0.000

Passive cycle raw data

Cycle   Singles      R+A         A       Scaler1    Scaler2  QC Tests
   1      10305      252       117         7262          0  Pass
   2      10185      237       114         7281          0  Pass
   3      10355      244       109         7375          0  Pass
   4      10288      218       110         7348          0  Pass
   5      10320      255       126         7142          0  Pass
   6      10158      246       123         7357          0  Pass
   7      10372      219       103         7338          0  Pass
   8      10335      270       122         7602          0  Pass
   9      10528      261       147         7464          0  Pass
  10      10126      226       124         7305          0  Pass

Passive cycle rate data

Cycle      Singles       Doubles       Triples          Mass  QC Tests
   1       171.750         2.250         0.000         0.000  Pass
   2       169.750         2.050         0.000         0.000  Pass
   3       172.583         2.250         0.000         0.000  Pass
   4       171.467         1.800         0.000         0.000  Pass
   5       172.000         2.150         0.000         0.000  Pass
   6       169.300         2.050         0.000         0.000  Pass
   7       172.867         1.933         0.000         0.000  Pass
   8       172.250         2.467         0.000         0.000  Pass
   9       175.467         1.900         0.000         0.000  Pass
  10       168.767         1.700         0.000         0.000  Pass
```

(2)

INCC 6.23.2.9 HM32 Not Validated

```
                  Facility: PPFF
      Material balance area: XXXX
             Detector type: UDL-1
               Detector id: AFAS-P BOTTOM
           Electronics id: PASS
        Measurement date: 24.06.05     14:01:03
        Results file name: 46500103.NOR
         Inspection number:
       Measurement option: Normalization
              Data source: IAEA DataZ file
     Detector configuration: Passive
                 QC tests: On
      Accidentals method: Measured
          Inspector name:
                 Comment:
          Ending comment: xx


                Predelay:      1.500
             Gate length:     64.000
             High voltage:       1720
            Die away time:    50.0000
               Efficiency:    0.0127
     Multiplicity deadtime:    0.0000
     Coefficient A deadtime:    0.0000
     Coefficient B deadtime:    0.0000
    *Coefficient C deadtime:    0.0000
      Doubles gate fraction:    0.0001
      Triples gate fraction:    0.0001

     Passive singles bkgrnd:      1.465  +-      0.033
     Passive doubles bkgrnd:      0.000  +-      0.000
     Passive triples bkgrnd:      0.000  +-      0.000
     Passive scaler1 bkgrnd:      0.000
     Passive scaler2 bkgrnd:      0.000
           Number of cycles:         10
           Count time (sec):     60.000
```

Summed raw data

```
                Number of good cycles:         10
                   Total count time:        600
          Shift register singles sum:      73627
Shift register reals + accidentals sum:      1273
       Shift register accidentals sum:       568
        Shift register 1st scaler sum:         0
        Shift register 2nd scaler sum:         0
```

Summed multiplicity distributions

```
         R+A sums       A sums
```

Messages

Normalization test -- data quality is inadequate

Results

```
                    Singles:    121.247  +-      0.647
                    Doubles:      1.175  +-      0.064
                    Triples:      0.000  +-      0.000
```



```
                    Scaler 1:      0.000  +-      0.000
                    Scaler 2:      0.000  +-      0.000
```

Normalization results for reference source: H4-694

```
          Current normalization constant:      1.000  +-      0.000
             Cf252 expected singles rate:    119.331  +-      0.196
             Cf252 measured singles rate:    121.247  +-      0.647
          Singles rate expected/measured:      0.984  +-      0.040
              New normalization constant:      1.000  +-      0.000
                  Normalization test  --  data quality is inadequate.
```

Cycle raw data

Count time (sec): 60.000

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	7260	121	58	0	0	Pass
2	7381	125	56	0	0	Pass
3	7334	130	65	0	0	Pass
4	7155	138	60	0	0	Pass
5	7353	138	50	0	0	Pass
6	7346	134	49	0	0	Pass
7	7606	137	58	0	0	Pass
8	7467	123	64	0	0	Pass
9	7292	102	53	0	0	Pass
10	7433	125	55	0	0	Pass

Cycle DTC rate data

Cycle	Singles	Doubles	Triples	QC Tests
1	119.535	1.050	0.000	Pass
2	121.552	1.150	0.000	Pass
3	120.768	1.083	0.000	Pass
4	117.785	1.300	0.000	Pass
5	121.085	1.467	0.000	Pass
6	120.968	1.417	0.000	Pass
7	125.302	1.317	0.000	Pass
8	122.985	0.983	0.000	Pass
9	120.068	0.817	0.000	Pass
10	122.418	1.167	0.000	Pass

INCC 5.1.2

```
                 Facility:  JMOX
   Material balance area:  JM2G
            Detector type:  AFAS
              Detector id:  JSR_01
          Electronics id:  JSR-12
  Inventory change code:
                 I/O code:
        Measurement date:  24.07.03  09:24:17
        Results file name:  473J2417.VER
        Inspection number:
                 Item id:  BWR TF
               Stratum id:  XXXX
            Material type:  Pu
 Original declared mass:  0.000
      Measurement option:  Verification
              Data source:  Review disk file
                 QC tests:  On
       Error calculation:  Sample method
      Accidentals method:  Measured
          Inspector name:
         Passive comment:

            Isotopics id:  Default
  Isotopics source code:  OD
                  Pu238:    0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu239:    0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                  Pu241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu242:    0.0000 +-   0.0000      0.0000 +-   0.0000
                Pu date:  00.01.01                24.07.03
                  Am241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                Am date:  00.01.01                24.07.03

               Predelay:      1.50
            Gate length:     64.00
         2nd gate length:     64.00
           High voltage:   1720
          Die away time:     50.0000
             Efficiency:      0.0080
  Multiplicity deadtime:      0.0000
 Coefficient A deadtime:      0.0000
 Coefficient B deadtime:      0.0000
 Coefficient C deadtime:      0.0000
  Doubles gate fraction:      0.0001
  Triples gate fraction:      0.0001

 Normalization constant:      1.0000 +-    0.0000

 Passive singles bkgrnd:      0.000 +-     0.000
 Passive doubles bkgrnd:      0.000 +-     0.000
 Passive triples bkgrnd:      0.000 +-     0.000
 Passive scaler1 bkgrnd:      0.000
 Passive scaler2 bkgrnd:      0.000

  Number passive cycles:         10
        Count time (sec):         60
```

Passive error messages

Known alpha analysis error

Results

```
                    Singles:         71.913 +-     0.428
                    Doubles:          0.282 +-     0.029
                    Triples:          0.000 +-     0.000
                   Scaler 1:        124.983 +-     0.412
                   Scaler 2:          0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	4379	43	22	7516	0	Pass
2	4422	43	27	7423	0	Pass
3	4328	28	22	7555	0	Pass
4	4390	45	27	7548	0	Pass
5	4300	34	15	7607	0	Pass
6	4179	39	14	7339	0	Pass
7	4185	30	20	7446	0	Pass
8	4299	47	27	7548	0	Pass
9	4306	39	20	7524	0	Pass
10	4360	36	21	7484	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	72.983	0.350	0.000	0.000	Pass
2	73.700	0.267	0.000	0.000	Pass
3	72.133	0.100	0.000	0.000	Pass
4	73.167	0.300	0.000	0.000	Pass
5	71.667	0.317	0.000	0.000	Pass
6	69.650	0.417	0.000	0.000	Pass
7	69.750	0.167	0.000	0.000	Pass
8	71.650	0.333	0.000	0.000	Pass
9	71.767	0.317	0.000	0.000	Pass
10	72.667	0.250	0.000	0.000	Pass

202407_AFAS-B_Collar.txt

INCC 5.1.2

```
               Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_01
         Electronics id:  JSR-12
  Inventory change code:
              I/O code:
      Measurement date:  24.07.03  09:40:21
     Results file name:  473J4021.VER
     Inspection number:
               Item id:  BWR COLLAR
            Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
    Measurement option:  Verification
           Data source:  Review disk file
              QC tests:  On
     Error calculation:  Sample method
    Accidentals method:  Measured
        Inspector name:
       Passive comment:

           Isotopics id:  Default
  Isotopics source code:  OD
                  Pu238:    0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu239:    0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                  Pu241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu242:    0.0000 +-   0.0000      0.0000 +-   0.0000
                Pu date:  00.01.01                24.07.03
                  Am241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                Am date:  00.01.01                24.07.03

               Predelay:      1.50
            Gate length:     64.00
        2nd gate length:     64.00
           High voltage:   1720
         Die away time:     50.0000
            Efficiency:      0.1970
  Multiplicity deadtime:   160.0000
 Coefficient A deadtime:     0.6419
 Coefficient B deadtime:     0.1030
 Coefficient C deadtime:     0.0000
  Doubles gate fraction:     0.0001
  Triples gate fraction:     0.0001

 Normalization constant:     1.0000 +-    0.0000

 Passive singles bkgrnd:     0.000 +-     0.000
 Passive doubles bkgrnd:     0.000 +-     0.000
 Passive triples bkgrnd:     0.000 +-     0.000
 Passive scaler1 bkgrnd:     0.000
 Passive scaler2 bkgrnd:     0.000

  Number passive cycles:        10
       Count time (sec):        60

Passive error messages

Known alpha analysis error
```

(1)

202407_AFAS-B_Collar.txt

Results

```
                 Singles:      2361.763 +-     2.635
                 Doubles:       504.541 +-     2.314
                 Triples:         0.000 +-     0.000
                Scaler 1:         8.587 +-     0.131
                Scaler 2:         0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	141404	51333	21366	552	0	Pass
2	141513	51475	21735	486	0	Pass
3	141333	51399	21211	472	0	Pass
4	142348	51614	21418	498	0	Pass
5	141541	51911	21531	516	0	Pass
6	141212	51487	21051	524	0	Pass
7	141871	52325	21405	524	0	Pass
8	142557	52433	21729	547	0	Pass
9	141788	51851	21543	516	0	Pass
10	140954	51068	21641	517	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	2357.625	500.206	0.000	0.000	Pass
2	2359.443	496.418	0.000	0.000	Pass
3	2356.441	503.895	0.000	0.000	Pass
4	2373.370	504.034	0.000	0.000	Pass
5	2359.910	507.101	0.000	0.000	Pass
6	2354.423	508.034	0.000	0.000	Pass
7	2365.414	516.116	0.000	0.000	Pass
8	2376.856	512.515	0.000	0.000	Pass
9	2364.030	505.900	0.000	0.000	Pass
10	2350.119	491.190	0.000	0.000	Pass

(2)

202407_AFAS-B_Bottom Fork.txt

INCC 5.1.2

```
               Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_02
         Electronics id:  JSR-12
  Inventory change code:
              I/O code:
      Measurement date:  24.07.03  09:57:32
     Results file name:  473J5732.VER
     Inspection number:
               Item id:  BWR BF
            Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
    Measurement option:  Verification
           Data source:  Review disk file
              QC tests:  On
     Error calculation:  Sample method
    Accidentals method:  Measured
        Inspector name:
       Passive comment:

           Isotopics id:  Default
  Isotopics source code:  OD
                  Pu238:    0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu239:    0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                  Pu241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu242:    0.0000 +-   0.0000      0.0000 +-   0.0000
                Pu date:  00.01.01                24.07.03
                  Am241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                Am date:  00.01.01                24.07.03

               Predelay:      1.50
            Gate length:     64.00
        2nd gate length:     64.00
           High voltage:   1720
         Die away time:     50.0000
            Efficiency:      0.0060
  Multiplicity deadtime:     0.0000
 Coefficient A deadtime:     0.0000
 Coefficient B deadtime:     0.0000
 Coefficient C deadtime:     0.0000
  Doubles gate fraction:     0.0001
  Triples gate fraction:     0.0001

 Normalization constant:     1.0000 +-    0.0000

 Passive singles bkgrnd:     0.000 +-     0.000
 Passive doubles bkgrnd:     0.000 +-     0.000
 Passive triples bkgrnd:     0.000 +-     0.000
 Passive scaler1 bkgrnd:     0.000
 Passive scaler2 bkgrnd:     0.000

  Number passive cycles:        10
       Count time (sec):        60

Passive error messages

No known alpha calibration
```

(1)

202407_AFAS-B_Bottom Fork.txt

Results

```
                 Singles:       129.123 +-     0.358
                 Doubles:         1.455 +-     0.047
                 Triples:         0.000 +-     0.000
                Scaler 1:         4.287 +-     0.125
                Scaler 2:         0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	7830	138	65	290	0	Pass
2	7704	148	60	252	0	Pass
3	7639	153	57	263	0	Pass
4	7735	143	49	206	0	Pass
5	7806	163	65	260	0	Pass
6	7776	160	62	281	0	Pass
7	7702	135	56	249	0	Pass
8	7664	149	69	241	0	Pass
9	7809	150	70	254	0	Pass
10	7809	155	68	276	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	130.500	1.217	0.000	0.000	Pass
2	128.400	1.467	0.000	0.000	Pass
3	127.317	1.600	0.000	0.000	Pass
4	128.917	1.567	0.000	0.000	Pass
5	130.100	1.633	0.000	0.000	Pass
6	129.600	1.633	0.000	0.000	Pass
7	128.367	1.317	0.000	0.000	Pass
8	127.733	1.333	0.000	0.000	Pass
9	130.150	1.333	0.000	0.000	Pass
10	130.150	1.450	0.000	0.000	Pass

(2)

```
INCC 5.1.2

              Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_02
         Electronics id:  JSR-12
  Inventory change code:
              I/O code:
      Measurement date:  24.07.03  10:12:37
     Results file name:  473K1237.VER
     Inspection number:
               Item id:  PWR TF
            Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
    Measurement option:  Verification
           Data source:  Review disk file
              QC tests:  On
     Error calculation:  Sample method
    Accidentals method:  Measured
        Inspector name:
       Passive comment:

          Isotopics id:  Default
  Isotopics source code:  OD
                 Pu238:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu239:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                 Pu241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu242:    0.0000 +-   0.0000      0.0000 +-   0.0000
               Pu date:  00.01.01                24.07.03
                 Am241:    0.0000 +-   0.0000      0.0000 +-   0.0000
               Am date:  00.01.01                24.07.03

              Predelay:      1.50
          Gate length:     64.00
       2nd gate length:     64.00
         High voltage:   1720
        Die away time:     50.0000
           Efficiency:      0.0126
 Multiplicity deadtime:     0.0000
Coefficient A deadtime:     0.0000
Coefficient B deadtime:     0.0000
Coefficient C deadtime:     0.0000
 Doubles gate fraction:     0.0001
 Triples gate fraction:     0.0001

Normalization constant:     1.0000 +-    0.0000

Passive singles bkgrnd:     0.000 +-     0.000
Passive doubles bkgrnd:     0.000 +-     0.000
Passive triples bkgrnd:     0.000 +-     0.000
Passive scaler1 bkgrnd:     0.000
Passive scaler2 bkgrnd:     0.000

 Number passive cycles:        10
      Count time (sec):        60

Passive error messages

No known alpha calibration
```



```
Results

                    Singles:        2.850 +-     0.068
                    Doubles:       -0.002 +-     0.002
                    Triples:        0.000 +-     0.000
                   Scaler 1:      112.772 +-     0.408
                   Scaler 2:        0.000 +-     0.000

Passive cycle raw data

Cycle   Singles      R+A         A       Scaler1    Scaler2  QC Tests
   1       185        0         1          6751          0  Pass
   2       158        0         0          6665          0  Pass
   3       174        0         0          6831          0  Pass
   4       176        0         0          6779          0  Pass
   5       146        0         0          6819          0  Pass
   6       180        0         0          6752          0  Pass
   7       187        0         0          6761          0  Pass
   8       177        0         0          6639          0  Pass
   9       162        0         0          6759          0  Pass
  10       165        0         0          6907          0  Pass

Passive cycle rate data

Cycle      Singles       Doubles       Triples          Mass  QC Tests
   1         3.083        -0.017         0.000         0.000  Pass
   2         2.633         0.000         0.000         0.000  Pass
   3         2.900         0.000         0.000         0.000  Pass
   4         2.933         0.000         0.000         0.000  Pass
   5         2.433         0.000         0.000         0.000  Pass
   6         3.000         0.000         0.000         0.000  Pass
   7         3.117         0.000         0.000         0.000  Pass
   8         2.950         0.000         0.000         0.000  Pass
   9         2.700         0.000         0.000         0.000  Pass
  10         2.750         0.000         0.000         0.000  Pass
```



```
INCC 6.23.2.9 HM32 Not Validated

                  Facility: PPFF
      Material balance area: XXXX
              Detector type: PASS
                Detector id: AFAS-P TOP
           Electronics id: UDL-1
         Measurement date: 24.07.03     10:15:54
        Results file name: 473K1554.NOR
         Inspection number:
        Measurement option: Normalization
               Data source: IAEA DataZ file
     Detector configuration: Passive
                  QC tests: On
        Accidentals method: Measured
            Inspector name:
                   Comment:
            Ending comment: xx


                 Predelay:      1.500
             Gate length:     64.000
            High voltage:       1720
            Die away time:    50.0000
               Efficiency:     0.0126
      Multiplicity deadtime:     0.0000
     Coefficient A deadtime:     0.0000
     Coefficient B deadtime:     0.0000
    *Coefficient C deadtime:     0.0000
      Doubles gate fraction:     0.0001
      Triples gate fraction:     0.0001

     Passive singles bkgrnd:      2.323  +-      0.086
     Passive doubles bkgrnd:      0.000  +-      0.000
     Passive triples bkgrnd:      0.000  +-      0.000
     Passive scaler1 bkgrnd:      0.000
     Passive scaler2 bkgrnd:      0.000
          Number of cycles:         10
          Count time (sec):     60.000

Summed raw data

                Number of good cycles:         10
                     Total count time:        600
           Shift register singles sum:      67630
Shift register reals + accidentals sum:       1136
        Shift register accidentals sum:        480
         Shift register 1st scaler sum:          0
         Shift register 2nd scaler sum:          0

Summed multiplicity distributions

          R+A sums       A sums

Messages

Normalization test -- data quality is inadequate

Results

                                Singles:    110.393  +-      0.356
                                Doubles:      1.093  +-      0.078
                                Triples:      0.000  +-      0.000
```



```
                                Scaler 1:      0.000  +-      0.000
                                Scaler 2:      0.000  +-      0.000

Normalization results for reference source: H4-694

          Current normalization constant:      1.000  +-      0.000
             Cf252 expected singles rate:    109.142  +-      0.244
             Cf252 measured singles rate:    110.393  +-      0.356
          Singles rate expected/measured:      0.989  +-      0.040
              New normalization constant:      1.000  +-      0.000
                  Normalization test  --  data quality is inadequate.

Cycle raw data

Count time (sec):      60.000

Cycle   Singles      R+A         A       Scaler1    Scaler2  QC Tests
   1      6710         93        54          0          0  Pass
   2      6799        132        63          0          0  Pass
   3      6787        102        40          0          0  Pass
   4      6630        123        36          0          0  Pass
   5      6805        107        46          0          0  Pass
   6      6778        107        58          0          0  Pass
   7      6879        128        42          0          0  Pass
   8      6743        127        54          0          0  Pass
   9      6740        106        39          0          0  Pass
  10      6759        111        48          0          0  Pass

Cycle DTC rate data

Cycle      Singles       Doubles       Triples  QC Tests
   1      109.510         0.650         0.000  Pass
   2      110.993         1.150         0.000  Pass
   3      110.793         1.033         0.000  Pass
   4      108.177         1.450         0.000  Pass
   5      111.093         1.017         0.000  Pass
   6      110.643         0.817         0.000  Pass
   7      112.327         1.433         0.000  Pass
   8      110.060         1.217         0.000  Pass
   9      110.010         1.117         0.000  Pass
  10      110.327         1.050         0.000  Pass
```

INCC 5.1.2

```
              Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_03
         Electronics id:  JSR-12
  Inventory change code:
              I/O code:
      Measurement date:  24.07.03  10:30:39
     Results file name:  473K3039.VER
     Inspection number:
               Item id:  PWR COLLAR
            Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
    Measurement option:  Verification
           Data source:  Review disk file
              QC tests:  On
     Error calculation:  Sample method
    Accidentals method:  Measured
        Inspector name:
       Passive comment:

          Isotopics id:  Default
  Isotopics source code:  OD
                 Pu238:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu239:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                 Pu241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu242:    0.0000 +-   0.0000      0.0000 +-   0.0000
              Pu date:  00.01.01                24.07.03
                Am241:    0.0000 +-   0.0000      0.0000 +-   0.0000
              Am date:  00.01.01                24.07.03

              Predelay:      1.50
           Gate length:     64.00
       2nd gate length:     64.00
          High voltage:   1720
        Die away time:     50.0000
            Efficiency:     0.1620
 Multiplicity deadtime:    86.5000
Coefficient A deadtime:     0.3458
Coefficient B deadtime:     0.0299
Coefficient C deadtime:     0.0000
 Doubles gate fraction:     0.0001
 Triples gate fraction:     0.0001

Normalization constant:     1.0000 +-    0.0000

Passive singles bkgrnd:     0.000 +-     0.000
Passive doubles bkgrnd:     0.000 +-     0.000
Passive triples bkgrnd:     0.000 +-     0.000
Passive scaler1 bkgrnd:     0.000
Passive scaler2 bkgrnd:     0.000

 Number passive cycles:        10
      Count time (sec):        60
```

Passive error messages

No passive calibration curve calibration
No known alpha calibration

Results

```
                Singles:      1932.776 +-     2.834
                Doubles:       329.777 +-     1.758
                Triples:         0.000 +-     0.000
               Scaler 1:        17.442 +-     0.225
               Scaler 2:         0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	116281	34218	14446	1001	0	Pass
2	115065	33561	14024	1047	0	Pass
3	115181	33695	14384	1065	0	Pass
4	115466	33827	14261	1124	0	Pass
5	116247	34673	14463	1088	0	Pass
6	116409	34483	14315	1040	0	Pass
7	116118	34343	14583	989	0	Pass
8	116685	34581	14513	1026	0	Pass
9	115946	34045	14033	1078	0	Pass
10	116074	33781	14451	1007	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	1938.341	329.754	0.000	0.000	Pass
2	1918.068	325.833	0.000	0.000	Pass
3	1920.002	322.064	0.000	0.000	Pass
4	1924.754	326.317	0.000	0.000	Pass
5	1937.775	337.059	0.000	0.000	Pass
6	1940.475	336.359	0.000	0.000	Pass
7	1935.624	329.554	0.000	0.000	Pass
8	1945.077	334.692	0.000	0.000	Pass
9	1932.756	333.756	0.000	0.000	Pass
10	1934.890	322.382	0.000	0.000	Pass

INCC 6.23.2.9 HM32 Not Validated

```
                 Facility: PPFF
   Material balance area: XXXX
           Detector type: PASS
             Detector id: AFAS-P COLLAR
          Electronics id: UDL-1
       Measurement date: 24.07.03     10:48:52
      Results file name: 473K4852.NOR
       Inspection number:
      Measurement option: Normalization
             Data source: IAEA DataZ file
 Detector configuration: Passive
               QC tests: On
     Accidentals method: Measured
         Inspector name:
                Comment:
          Ending comment: xx


              Predelay:      1.500
           Gate length:     64.000
          High voltage:       1720
        Die away time:     50.0000
            Efficiency:     0.1620
 Multiplicity deadtime:    86.5000
Coefficient A deadtime:     0.3458
Coefficient B deadtime:     0.0299
*Coefficient C deadtime:    0.0000
 Doubles gate fraction:     0.0001
 Triples gate fraction:     0.0001

Passive singles bkgrnd:    15.303  +-      0.146
Passive doubles bkgrnd:     0.017  +-      0.004
Passive triples bkgrnd:     0.000  +-      0.000
Passive scaler1 bkgrnd:     0.000
Passive scaler2 bkgrnd:     0.000
      Number of cycles:        10
      Count time (sec):    60.000
```

Summed raw data

```
          Number of good cycles:        10
                Total count time:       600
       Shift register singles sum:   1158511
Shift register reals + accidentals sum:   340688
   Shift register accidentals sum:   142342
    Shift register 1st scaler sum:        0
    Shift register 2nd scaler sum:        0
```

Summed multiplicity distributions

R+A sums A sums

Messages

Normalization test -- data quality is inadequate

Results

```
                Singles:   1915.871  +-      1.894
                Doubles:    330.781  +-      2.102
                Triples:      0.000  +-      0.000
```



```
               Scaler 1:      0.000  +-      0.000
               Scaler 2:      0.000  +-      0.000
```

Normalization results for reference source: H4-694

```
      Current normalization constant:      1.000  +-      0.000
         Cf252 expected doubles rate:    323.537  +-      0.491
         Cf252 measured doubles rate:    330.781  +-      2.102
      Doubles rate expected/measured:      0.978  +-      0.006
          New normalization constant:      1.000  +-      0.000
              Normalization test  --  data quality is inadequate.
          Measured percent precision:      0.636
          Required percent precision:      0.300
    Repeat measurement for at least:       0.000
```

Cycle raw data

Count time (sec): 60.000

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	115747	34029	14112	0	0	Pass
2	116043	34028	14297	0	0	Pass
3	115359	33579	14075	0	0	Pass
4	116213	34619	14367	0	0	Pass
5	115771	33952	14191	0	0	Pass
6	115596	33892	14368	0	0	Pass
7	115424	33636	14188	0	0	Pass
8	116176	34015	14527	0	0	Pass
9	115731	34236	14195	0	0	Pass
10	116451	34702	14022	0	0	Pass

Cycle DTC rate data

Cycle	Singles	Doubles	Triples	QC Tests
1	1914.135	332.155	0.000	Pass
2	1919.070	329.053	0.000	Pass
3	1907.666	325.266	0.000	Pass
4	1921.904	337.743	0.000	Pass
5	1914.535	329.553	0.000	Pass
6	1911.618	325.600	0.000	Pass
7	1908.750	324.332	0.000	Pass
8	1921.288	325.001	0.000	Pass
9	1913.868	334.223	0.000	Pass
10	1925.872	344.881	0.000	Pass

INCC 5.1.2

```
              Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_03
         Electronics id:  JSR-12
  Inventory change code:
              I/O code:
      Measurement date:  24.07.03  10:58:46
     Results file name:  473K5846.VER
     Inspection number:
               Item id:  PWR BF
            Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
    Measurement option:  Verification
           Data source:  Review disk file
              QC tests:  On
     Error calculation:  Sample method
    Accidentals method:  Measured
        Inspector name:
       Passive comment:

          Isotopics id:  Default
  Isotopics source code:  OD
                 Pu238:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu239:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                 Pu241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu242:    0.0000 +-   0.0000      0.0000 +-   0.0000
              Pu date:  00.01.01                24.07.03
                Am241:    0.0000 +-   0.0000      0.0000 +-   0.0000
              Am date:  00.01.01                24.07.03

              Predelay:      1.50
          Gate length:     64.00
       2nd gate length:     64.00
         High voltage:   1720
        Die away time:     50.0000
           Efficiency:      0.0127
 Multiplicity deadtime:     0.0000
Coefficient A deadtime:     0.0000
Coefficient B deadtime:     0.0000
Coefficient C deadtime:     0.0000
 Doubles gate fraction:     0.0001
 Triples gate fraction:     0.0001

Normalization constant:     1.0000 +-    0.0000

Passive singles bkgrnd:     0.000 +-     0.000
Passive doubles bkgrnd:     0.000 +-     0.000
Passive triples bkgrnd:     0.000 +-     0.000
Passive scaler1 bkgrnd:     0.000
Passive scaler2 bkgrnd:     0.000

 Number passive cycles:        10
      Count time (sec):        60
```

Passive error messages

No passive calibration curve calibration
No known alpha calibration

Results

```
                 Singles:      170.633 +-     0.559
                 Doubles:        2.220 +-     0.106
                 Triples:        0.000 +-     0.000
                Scaler 1:      119.815 +-     0.625
                Scaler 2:        0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	10119	221	99	7302	0	Pass
2	10346	258	112	7062	0	Pass
3	10265	226	87	7215	0	Pass
4	10248	237	124	7067	0	Pass
5	10394	235	103	7393	0	Pass
6	10022	235	104	7056	0	Pass
7	10241	248	92	7200	0	Pass
8	10211	253	116	7265	0	Pass
9	10241	269	107	7253	0	Pass
10	10293	205	111	7076	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	168.650	2.033	0.000	0.000	Pass
2	172.433	2.433	0.000	0.000	Pass
3	171.083	2.317	0.000	0.000	Pass
4	170.800	1.883	0.000	0.000	Pass
5	173.233	2.200	0.000	0.000	Pass
6	167.033	2.183	0.000	0.000	Pass
7	170.683	2.600	0.000	0.000	Pass
8	170.183	2.283	0.000	0.000	Pass
9	170.683	2.700	0.000	0.000	Pass
10	171.550	1.567	0.000	0.000	Pass

INCC 6.23.2.9 HM32 Not Validated

```
                 Facility: PPFF
     Material balance area: XXXX
             Detector type: UDL-1
               Detector id: AFAS-P BOTTOM
          Electronics id: PASS
       Measurement date: 24.07.03     11:07:38
      Results file name: 473L0738.NOR
       Inspection number:
      Measurement option: Normalization
             Data source: IAEA DataZ file
  Detector configuration: Passive
               QC tests: On
      Accidentals method: Measured
          Inspector name:
                 Comment:
          Ending comment: xx


              Predelay:      1.500
          Gate length:     64.000
         High voltage:       1720
        Die away time:    50.0000
           Efficiency:     0.0127
 Multiplicity deadtime:     0.0000
Coefficient A deadtime:     0.0000
Coefficient B deadtime:     0.0000
*Coefficient C deadtime:    0.0000
 Doubles gate fraction:     0.0001
 Triples gate fraction:     0.0001

Passive singles bkgrnd:     1.687  +-     0.064
Passive doubles bkgrnd:     0.000  +-     0.000
Passive triples bkgrnd:     0.000  +-     0.000
Passive scaler1 bkgrnd:     0.000
Passive scaler2 bkgrnd:     0.000
      Number of cycles:        10
      Count time (sec):    60.000
```

Summed raw data

```
          Number of good cycles:        10
                Total count time:       600
       Shift register singles sum:    71726
Shift register reals + accidentals sum:  1313
   Shift register accidentals sum:      586
    Shift register 1st scaler sum:        0
    Shift register 2nd scaler sum:        0
```

Summed multiplicity distributions

R+A sums A sums

Messages

Normalization test -- data quality is inadequate

Results

```
                 Singles:    117.857  +-     0.421
                 Doubles:      1.212  +-     0.025
                 Triples:      0.000  +-     0.000
```



```
                Scaler 1:      0.000  +-     0.000
                Scaler 2:      0.000  +-     0.000
```

Normalization results for reference source: H4-694

```
      Current normalization constant:      1.000  +-     0.000
         Cf252 expected singles rate:    116.968  +-     0.192
         Cf252 measured singles rate:    117.857  +-     0.421
      Singles rate expected/measured:      0.992  +-     0.040
          New normalization constant:      1.000  +-     0.000
              Normalization test  --  data quality is inadequate.
```

Cycle raw data

Count time (sec): 60.000

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	7173	127	64	0	0	Pass
2	7175	129	53	0	0	Pass
3	7147	136	68	0	0	Pass
4	7175	131	57	0	0	Pass
5	7331	129	57	0	0	Pass
6	7160	130	51	0	0	Pass
7	7086	134	62	0	0	Pass
8	7216	127	57	0	0	Pass
9	7225	132	54	0	0	Pass
10	7038	138	63	0	0	Pass

Cycle DTC rate data

Cycle	Singles	Doubles	Triples	QC Tests
1	117.863	1.050	0.000	Pass
2	117.897	1.267	0.000	Pass
3	117.430	1.133	0.000	Pass
4	117.897	1.233	0.000	Pass
5	120.497	1.200	0.000	Pass
6	117.647	1.317	0.000	Pass
7	116.413	1.200	0.000	Pass
8	118.580	1.167	0.000	Pass
9	118.730	1.300	0.000	Pass
10	115.613	1.250	0.000	Pass

INCC 5.1.2

Facility:	JMOX
Material balance area:	JM2G
Detector type:	AFAS
Detector id:	JSR_01
Electronics id:	JSR-12
Inventory change code:	
I/O code:	
Measurement date:	24.08.02 10:38:00
Results file name:	482K3800.VER
Inspection number:	
Item id:	BWR TF
Stratum id:	XXXX
Material type:	Pu
Original declared mass:	0.000
Measurement option:	Verification
Data source:	Review disk file
QC tests:	On
Error calculation:	Sample method
Accidentals method:	Measured
Inspector name:	
Passive comment:	

Isotopics id:	Default			
Isotopics source code:	OD			
Pu238:	0.0000 +-	0.0000	0.0000 +-	0.0000
Pu239:	0.0000 +-	0.0000	0.0000 +-	0.0000
Pu240:	100.0000 +-	0.0000	100.0000 +-	0.0000
Pu241:	0.0000 +-	0.0000	0.0000 +-	0.0000
Pu242:	0.0000 +-	0.0000	0.0000 +-	0.0000
Pu date:	00.01.01		24.08.02	
Am241:	0.0000 +-	0.0000	0.0000 +-	0.0000
Am date:	00.01.01		24.08.02	

Predelay:	1.50
Gate length:	64.00
2nd gate length:	64.00
High voltage:	1720
Die away time:	50.0000
Efficiency:	0.0080
Multiplicity deadtime:	0.0000
Coefficient A deadtime:	0.0000
Coefficient B deadtime:	0.0000
Coefficient C deadtime:	0.0000
Doubles gate fraction:	0.0001
Triples gate fraction:	0.0001
Normalization constant:	1.0000 +- 0.0000
Passive singles bkgrnd:	0.000 +- 0.000
Passive doubles bkgrnd:	0.000 +- 0.000
Passive triples bkgrnd:	0.000 +- 0.000
Passive scaler1 bkgrnd:	0.000
Passive scaler2 bkgrnd:	0.000
Number passive cycles:	10
Count time (sec):	60

Passive error messages

Known alpha analysis error

Results

Singles:	70.802 +-	0.492
Doubles:	0.362 +-	0.024
Triples:	0.000 +-	0.000
Scaler 1:	122.203 +-	0.468
Scaler 2:	0.000 +-	0.000

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	4378	44	19	7326	0	Pass
2	4282	49	21	7443	0	Pass
3	4249	38	21	7384	0	Pass
4	4372	41	18	7320	0	Pass
5	4212	38	22	7341	0	Pass
6	4308	47	20	7356	0	Pass
7	4111	39	22	7303	0	Pass
8	4230	42	22	7124	0	Pass
9	4235	36	10	7430	0	Pass
10	4104	36	18	7295	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	72.967	0.417	0.000	0.000	Pass
2	71.367	0.467	0.000	0.000	Pass
3	70.817	0.283	0.000	0.000	Pass
4	72.867	0.383	0.000	0.000	Pass
5	70.200	0.267	0.000	0.000	Pass
6	71.800	0.450	0.000	0.000	Pass
7	68.517	0.283	0.000	0.000	Pass
8	70.500	0.333	0.000	0.000	Pass
9	70.583	0.433	0.000	0.000	Pass
10	68.400	0.300	0.000	0.000	Pass

INCC 5.1.2

Facility:	JMOX
Material balance area:	JM2G
Detector type:	AFAS
Detector id:	JSR_01
Electronics id:	JSR-12
Inventory change code:	
I/O code:	
Measurement date:	24.08.05 12:24:57
Results file name:	485M2457.VER
Inspection number:	
Item id:	BWR COLLAR
Stratum id:	XXXX
Material type:	Pu
Original declared mass:	0.000
Measurement option:	Verification
Data source:	Review disk file
QC tests:	On
Error calculation:	Sample method
Accidentals method:	Measured
Inspector name:	
Passive comment:	

Isotopics id:	Default			
Isotopics source code:	OD			
Pu238:	0.0000 +-	0.0000	0.0000 +-	0.0000
Pu239:	0.0000 +-	0.0000	0.0000 +-	0.0000
Pu240:	100.0000 +-	0.0000	100.0000 +-	0.0000
Pu241:	0.0000 +-	0.0000	0.0000 +-	0.0000
Pu242:	0.0000 +-	0.0000	0.0000 +-	0.0000
Pu date:	00.01.01		24.08.05	
Am241:	0.0000 +-	0.0000	0.0000 +-	0.0000
Am date:	00.01.01		24.08.05	

Predelay:	1.50
Gate length:	64.00
2nd gate length:	64.00
High voltage:	1720
Die away time:	50.0000
Efficiency:	0.1970
Multiplicity deadtime:	160.0000
Coefficient A deadtime:	0.6419
Coefficient B deadtime:	0.1030
Coefficient C deadtime:	0.0000
Doubles gate fraction:	0.0001
Triples gate fraction:	0.0001
Normalization constant:	1.0000 +- 0.0000
Passive singles bkgrnd:	0.000 +- 0.000
Passive doubles bkgrnd:	0.000 +- 0.000
Passive triples bkgrnd:	0.000 +- 0.000
Passive scaler1 bkgrnd:	0.000
Passive scaler2 bkgrnd:	0.000
Number passive cycles:	10
Count time (sec):	60

Passive error messages

Known alpha analysis error

Results

Singles:	2306.397 +-	2.706
Doubles:	491.601 +-	2.133
Triples:	0.000 +-	0.000
Scaler 1:	8.747 +-	0.099
Scaler 2:	0.000 +-	0.000

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	139011	50779	20679	524	0	Pass
2	137942	49374	20209	543	0	Pass
3	138113	49498	20447	546	0	Pass
4	138180	49781	20721	530	0	Pass
5	138815	49916	20246	509	0	Pass
6	138800	50346	20374	492	0	Pass
7	138657	49957	20599	533	0	Pass
8	137275	49137	20055	507	0	Pass
9	138283	49870	20633	549	0	Pass
10	138250	50138	20309	515	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	2317.712	502.414	0.000	0.000	Pass
2	2299.882	486.801	0.000	0.000	Pass
3	2302.734	484.900	0.000	0.000	Pass
4	2303.852	485.050	0.000	0.000	Pass
5	2314.443	495.235	0.000	0.000	Pass
6	2314.193	500.276	0.000	0.000	Pass
7	2311.807	490.027	0.000	0.000	Pass
8	2288.757	485.413	0.000	0.000	Pass
9	2305.570	488.005	0.000	0.000	Pass
10	2305.019	497.886	0.000	0.000	Pass

INCC 5.1.2

Facility:	JMOX
Material balance area:	JM2G
Detector type:	AFAS
Detector id:	JSR_02
Electronics id:	JSR-12
Inventory change code:	
I/O code:	
Measurement date:	24.08.02 11:10:43
Results file name:	482L1043.VER
Inspection number:	
Item id:	BWR BF
Stratum id:	XXXX
Material type:	Pu
Original declared mass:	0.000
Measurement option:	Verification
Data source:	Review disk file
QC tests:	On
Error calculation:	Sample method
Accidentals method:	Measured
Inspector name:	
Passive comment:	

Isotopics id:	Default				
Isotopics source code:	OD				
Pu238:	0.0000 +-	0.0000	0.0000 +-	0.0000	
Pu239:	0.0000 +-	0.0000	0.0000 +-	0.0000	
Pu240:	100.0000 +-	0.0000	100.0000 +-	0.0000	
Pu241:	0.0000 +-	0.0000	0.0000 +-	0.0000	
Pu242:	0.0000 +-	0.0000	0.0000 +-	0.0000	
Pu date:	00.01.01		24.08.02		
Am241:	0.0000 +-	0.0000	0.0000 +-	0.0000	
Am date:	00.01.01		24.08.02		

Predelay:	1.50
Gate length:	64.00
2nd gate length:	64.00
High voltage:	1720
Die away time:	50.0000
Efficiency:	0.0060
Multiplicity deadtime:	0.0000
Coefficient A deadtime:	0.0000
Coefficient B deadtime:	0.0000
Coefficient C deadtime:	0.0000
Doubles gate fraction:	0.0001
Triples gate fraction:	0.0001
Normalization constant:	1.0000 +- 0.0000
Passive singles bkgrnd:	0.000 +- 0.000
Passive doubles bkgrnd:	0.000 +- 0.000
Passive triples bkgrnd:	0.000 +- 0.000
Passive scaler1 bkgrnd:	0.000
Passive scaler2 bkgrnd:	0.000
Number passive cycles:	10
Count time (sec):	60

Passive error messages

No known alpha calibration

Results

Singles:	126.058 +-	0.453
Doubles:	1.287 +-	0.072
Triples:	0.000 +-	0.000
Scaler 1:	4.233 +-	0.061
Scaler 2:	0.000 +-	0.000

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	7674	163	67	265	0	Pass
2	7559	128	58	237	0	Pass
3	7626	140	48	243	0	Pass
4	7612	144	62	264	0	Pass
5	7630	140	63	268	0	Pass
6	7479	115	65	266	0	Pass
7	7648	135	46	241	0	Pass
8	7494	126	60	246	0	Pass
9	7485	138	60	254	0	Pass
10	7428	136	64	256	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	127.900	1.600	0.000	0.000	Pass
2	125.983	1.167	0.000	0.000	Pass
3	127.100	1.533	0.000	0.000	Pass
4	126.867	1.367	0.000	0.000	Pass
5	127.167	1.283	0.000	0.000	Pass
6	124.650	0.833	0.000	0.000	Pass
7	127.467	1.483	0.000	0.000	Pass
8	124.900	1.100	0.000	0.000	Pass
9	124.750	1.300	0.000	0.000	Pass
10	123.800	1.200	0.000	0.000	Pass

INCC 5.1.2

Facility:	JMOX
Material balance area:	JM2G
Detector type:	AFAS
Detector id:	JSR_02
Electronics id:	JSR-12
Inventory change code:	
I/O code:	
Measurement date:	24.08.02 11:26:47
Results file name:	482L2647.VER
Inspection number:	
Item id:	PWR TF
Stratum id:	XXXX
Material type:	Pu
Original declared mass:	0.000
Measurement option:	Verification
Data source:	Review disk file
QC tests:	On
Error calculation:	Sample method
Accidentals method:	Measured
Inspector name:	
Passive comment:	

Isotopics id:	Default				
Isotopics source code:	OD				
Pu238:	0.0000 +-	0.0000	0.0000 +-	0.0000	
Pu239:	0.0000 +-	0.0000	0.0000 +-	0.0000	
Pu240:	100.0000 +-	0.0000	100.0000 +-	0.0000	
Pu241:	0.0000 +-	0.0000	0.0000 +-	0.0000	
Pu242:	0.0000 +-	0.0000	0.0000 +-	0.0000	
Pu date:	00.01.01		24.08.02		
Am241:	0.0000 +-	0.0000	0.0000 +-	0.0000	
Am date:	00.01.01		24.08.02		

Predelay:	1.50
Gate length:	64.00
2nd gate length:	64.00
High voltage:	1720
Die away time:	50.0000
Efficiency:	0.0126
Multiplicity deadtime:	0.0000
Coefficient A deadtime:	0.0000
Coefficient B deadtime:	0.0000
Coefficient C deadtime:	0.0000
Doubles gate fraction:	0.0001
Triples gate fraction:	0.0001
Normalization constant:	1.0000 +- 0.0000
Passive singles bkgrnd:	0.000 +- 0.000
Passive doubles bkgrnd:	0.000 +- 0.000
Passive triples bkgrnd:	0.000 +- 0.000
Passive scaler1 bkgrnd:	0.000
Passive scaler2 bkgrnd:	0.000
Number passive cycles:	10
Count time (sec):	60

Passive error messages

No known alpha calibration

Results

Singles:	3.240 +-	0.073
Doubles:	0.000 +-	0.000
Triples:	0.000 +-	0.000
Scaler 1:	109.593 +-	0.584
Scaler 2:	0.000 +-	0.000

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	173	0	0	6738	0	Pass
2	207	0	0	6467	0	Pass
3	200	0	0	6427	0	Pass
4	221	0	0	6604	0	Pass
5	190	0	0	6424	0	Pass
6	183	0	0	6576	0	Pass
7	184	0	0	6542	0	Pass
8	195	0	0	6640	0	Pass
9	188	0	0	6626	0	Pass
10	203	0	0	6712	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	2.883	0.000	0.000	0.000	Pass
2	3.450	0.000	0.000	0.000	Pass
3	3.333	0.000	0.000	0.000	Pass
4	3.683	0.000	0.000	0.000	Pass
5	3.167	0.000	0.000	0.000	Pass
6	3.050	0.000	0.000	0.000	Pass
7	3.067	0.000	0.000	0.000	Pass
8	3.250	0.000	0.000	0.000	Pass
9	3.133	0.000	0.000	0.000	Pass
10	3.383	0.000	0.000	0.000	Pass

INCC 6.23.2.9 HM32 Not Validated

```
                  Facility: PPFF
      Material balance area: XXXX
             Detector type: PASS
               Detector id: AFAS-P TOP
            Electronics id: UDL-1
          Measurement date: 24.08.02     11:39:48
         Results file name: 482L3948.NOR
          Inspection number:
        Measurement option: Normalization
               Data source: IAEA DataZ file
     Detector configuration: Passive
                  QC tests: On
       Accidentals method: Measured
           Inspector name:
                  Comment:
           Ending comment: xx


                 Predelay:      1.500
              Gate length:     64.000
             High voltage:       1720
            Die away time:    50.0000
               Efficiency:     0.0126
     Multiplicity deadtime:     0.0000
    Coefficient A deadtime:     0.0000
    Coefficient B deadtime:     0.0000
   *Coefficient C deadtime:     0.0000
     Doubles gate fraction:     0.0001
     Triples gate fraction:     0.0001

    Passive singles bkgrnd:      2.127  +-      0.063
    Passive doubles bkgrnd:      0.038  +-      0.033
    Passive triples bkgrnd:      0.000  +-      0.000
    Passive scaler1 bkgrnd:      0.000
    Passive scaler2 bkgrnd:      0.000
          Number of cycles:         10
          Count time (sec):     60.000
```

Summed raw data

```
                Number of good cycles:         10
                    Total count time:        600
           Shift register singles sum:      65688
Shift register reals + accidentals sum:       1131
       Shift register accidentals sum:        470
        Shift register 1st scaler sum:          0
        Shift register 2nd scaler sum:          0
```

Summed multiplicity distributions

```
         R+A sums       A sums
```

Messages

Normalization test -- data quality is inadequate

Results

```
                    Singles:    107.353  +-      0.538
                    Doubles:      1.063  +-      0.068
                    Triples:      0.000  +-      0.000
```



```
                    Scaler 1:      0.000  +-      0.000
                    Scaler 2:      0.000  +-      0.000
```

Normalization results for reference source: H4-694

```
          Current normalization constant:      1.000  +-      0.000
             Cf252 expected singles rate:    106.813  +-      0.239
             Cf252 measured singles rate:    107.353  +-      0.538
        Singles rate expected/measured:      0.995  +-      0.040
             New normalization constant:      1.000  +-      0.000
                 Normalization test  --  data quality is inadequate.
```

Cycle raw data

Count time (sec): 60.000

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	6633	119	48	0	0	Pass
2	6655	128	52	0	0	Pass
3	6395	92	43	0	0	Pass
4	6585	107	40	0	0	Pass
5	6472	105	45	0	0	Pass
6	6474	106	47	0	0	Pass
7	6565	114	46	0	0	Pass
8	6528	109	48	0	0	Pass
9	6710	109	49	0	0	Pass
10	6671	142	52	0	0	Pass

Cycle DTC rate data

Cycle	Singles	Doubles	Triples	QC Tests
1	108.423	1.145	0.000	Pass
2	108.790	1.228	0.000	Pass
3	104.457	0.778	0.000	Pass
4	107.623	1.078	0.000	Pass
5	105.740	0.962	0.000	Pass
6	105.773	0.945	0.000	Pass
7	107.290	1.095	0.000	Pass
8	106.673	0.978	0.000	Pass
9	109.707	0.962	0.000	Pass
10	109.057	1.462	0.000	Pass

INCC 5.1.2

```
                Facility:  JMOX
   Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_03
         Electronics id:  JSR-12
  Inventory change code:
                 I/O code:
       Measurement date:  24.08.02  13:27:15
      Results file name:  482N2715.VER
      Inspection number:
                Item id:  PWR COLLAR
             Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
     Measurement option:  Verification
            Data source:  Review disk file
              QC tests:  On
      Error calculation:  Sample method
     Accidentals method:  Measured
         Inspector name:
        Passive comment:

           Isotopics id:  Default
  Isotopics source code:  OD
                 Pu238:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu239:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                 Pu241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu242:    0.0000 +-   0.0000      0.0000 +-   0.0000
               Pu date:  00.01.01                24.08.02
                 Am241:    0.0000 +-   0.0000      0.0000 +-   0.0000
               Am date:  00.01.01                24.08.02

               Predelay:      1.50
            Gate length:     64.00
        2nd gate length:     64.00
           High voltage:   1720
          Die away time:     50.0000
             Efficiency:      0.1620
  Multiplicity deadtime:     86.5000
 Coefficient A deadtime:      0.3458
 Coefficient B deadtime:      0.0299
 Coefficient C deadtime:      0.0000
  Doubles gate fraction:      0.0001
  Triples gate fraction:      0.0001

 Normalization constant:      1.0000 +-    0.0000

 Passive singles bkgrnd:      0.000 +-     0.000
 Passive doubles bkgrnd:      0.000 +-     0.000
 Passive triples bkgrnd:      0.000 +-     0.000
 Passive scaler1 bkgrnd:      0.000
 Passive scaler2 bkgrnd:      0.000

  Number passive cycles:         10
        Count time (sec):        60
```

Passive error messages

No passive calibration curve calibration
No known alpha calibration

Results

```
                    Singles:     1890.399 +-     1.552
                    Doubles:      323.396 +-     1.377
                    Triples:        0.000 +-     0.000
                   Scaler 1:       16.842 +-     0.235
                   Scaler 2:        0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	113271	32897	13929	1048	0	Pass
2	113313	32889	13738	1027	0	Pass
3	113486	33035	13419	972	0	Pass
4	113572	33527	13645	1061	0	Pass
5	113539	33354	13744	953	0	Pass
6	113030	32932	13660	979	0	Pass
7	113948	33326	13904	978	0	Pass
8	113476	32831	13583	1073	0	Pass
9	112906	32832	13437	1045	0	Pass
10	113513	33190	13843	969	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	1888.158	316.340	0.000	0.000	Pass
2	1888.858	319.392	0.000	0.000	Pass
3	1891.743	327.147	0.000	0.000	Pass
4	1893.176	331.584	0.000	0.000	Pass
5	1892.626	327.047	0.000	0.000	Pass
6	1884.140	321.409	0.000	0.000	Pass
7	1899.445	323.913	0.000	0.000	Pass
8	1891.576	321.010	0.000	0.000	Pass
9	1882.073	323.460	0.000	0.000	Pass
10	1892.193	322.661	0.000	0.000	Pass

INCC 6.23.2.9 HM32 Not Validated

```
                  Facility: PPFF
      Material balance area: XXXX
             Detector type: PASS
               Detector id: AFAS-P COLLAR
            Electronics id: UDL-1
          Measurement date: 24.08.02     13:37:44
         Results file name: 482N3744.NOR
         Inspection number:
        Measurement option: Normalization
               Data source: IAEA DataZ file
     Detector configuration: Passive
                 QC tests: On
       Accidentals method: Measured
           Inspector name:
                  Comment:
           Ending comment: xx

                 Predelay:      1.500
              Gate length:     64.000
             High voltage:       1720
             Die away time:   50.0000
                Efficiency:    0.1620
     Multiplicity deadtime:   86.5000
    Coefficient A deadtime:    0.3458
    Coefficient B deadtime:    0.0299
   *Coefficient C deadtime:    0.0000
     Doubles gate fraction:    0.0001
     Triples gate fraction:    0.0001

    Passive singles bkgrnd:    14.062  +-      0.142
    Passive doubles bkgrnd:     0.038  +-      0.033
    Passive triples bkgrnd:     0.000  +-      0.000
    Passive scaler1 bkgrnd:     0.000
    Passive scaler2 bkgrnd:     0.000
          Number of cycles:        10
          Count time (sec):    60.000
```

Summed raw data

```
                Number of good cycles:        10
                    Total count time:       600
           Shift register singles sum:   1136254
Shift register reals + accidentals sum:   332469
       Shift register accidentals sum:    138222
        Shift register 1st scaler sum:         0
        Shift register 2nd scaler sum:         0
```

Summed multiplicity distributions

```
         R+A sums       A sums
```

Messages

Normalization test -- data quality is inadequate

Results

```
                    Singles:   1880.005  +-      2.536
                    Doubles:    323.919  +-      1.094
                    Triples:      0.000  +-      0.000
```



```
                    Scaler 1:      0.000  +-      0.000
                    Scaler 2:      0.000  +-      0.000
```

Normalization results for reference source: H4-694

```
         Current normalization constant:      1.000  +-      0.000
            Cf252 expected doubles rate:    316.621  +-      0.480
            Cf252 measured doubles rate:    323.919  +-      1.094
         Doubles rate expected/measured:      0.977  +-      0.004
             New normalization constant:      1.000  +-      0.000
                 Normalization test  --  data quality is inadequate.
             Measured percent precision:      0.338
             Required percent precision:      0.300
        Repeat measurement for at least:      0.000
```

Cycle raw data

Count time (sec): 60.000

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	113396	33047	13787	0	0	Pass
2	114482	33463	13910	0	0	Pass
3	114286	33579	14111	0	0	Pass
4	113249	32879	13599	0	0	Pass
5	113227	32886	13626	0	0	Pass
6	113475	33172	14000	0	0	Pass
7	113600	33646	13983	0	0	Pass
8	113527	33402	13568	0	0	Pass
9	113010	32952	13597	0	0	Pass
10	114002	33443	14041	0	0	Pass

Cycle DTC rate data

Cycle	Singles	Doubles	Triples	QC Tests
1	1876.181	321.172	0.000	Pass
2	1894.286	326.060	0.000	Pass
3	1891.019	324.642	0.000	Pass
4	1873.730	321.505	0.000	Pass
5	1873.363	321.171	0.000	Pass
6	1877.498	319.704	0.000	Pass
7	1879.582	327.893	0.000	Pass
8	1878.365	330.745	0.000	Pass
9	1869.745	322.755	0.000	Pass
10	1886.284	323.541	0.000	Pass

INCC 5.1.2

```
                Facility:  JMOX
   Material balance area:  JM2G
           Detector type:  AFAS
             Detector id:  JSR_03
          Electronics id:  JSR-12
  Inventory change code:
                 I/O code:
       Measurement date:  24.08.02  13:44:20
      Results file name:  482N4420.VER
      Inspection number:
                Item id:  PWR BF
             Stratum id:  XXXX
           Material type:  Pu
 Original declared mass:  0.000
     Measurement option:  Verification
            Data source:  Review disk file
               QC tests:  On
      Error calculation:  Sample method
     Accidentals method:  Measured
         Inspector name:
        Passive comment:

           Isotopics id:  Default
  Isotopics source code:  OD
                  Pu238:    0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu239:    0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                  Pu241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu242:    0.0000 +-   0.0000      0.0000 +-   0.0000
                Pu date:  00.01.01                24.08.02
                  Am241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                Am date:  00.01.01                24.08.02

               Predelay:      1.50
            Gate length:     64.00
        2nd gate length:     64.00
           High voltage:   1720
          Die away time:     50.0000
             Efficiency:      0.0127
  Multiplicity deadtime:      0.0000
 Coefficient A deadtime:      0.0000
 Coefficient B deadtime:      0.0000
 Coefficient C deadtime:      0.0000
  Doubles gate fraction:      0.0001
  Triples gate fraction:      0.0001

 Normalization constant:      1.0000 +-    0.0000

 Passive singles bkgrnd:      0.000 +-     0.000
 Passive doubles bkgrnd:      0.000 +-     0.000
 Passive triples bkgrnd:      0.000 +-     0.000
 Passive scaler1 bkgrnd:      0.000
 Passive scaler2 bkgrnd:      0.000

  Number passive cycles:         10
        Count time (sec):        60
```

Passive error messages

No passive calibration curve calibration
No known alpha calibration

Results

```
                    Singles:       166.265 +-     0.516
                    Doubles:         2.170 +-     0.114
                    Triples:         0.000 +-     0.000
                   Scaler 1:       117.542 +-     0.535
                   Scaler 2:         0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	9931	235	105	7116	0	Pass
2	9915	214	114	7051	0	Pass
3	10085	248	107	7066	0	Pass
4	10168	260	125	7126	0	Pass
5	9975	253	106	7138	0	Pass
6	9816	223	99	7027	0	Pass
7	9941	260	86	6809	0	Pass
8	9934	206	98	7023	0	Pass
9	9964	241	108	7165	0	Pass
10	10030	215	105	7004	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	165.517	2.167	0.000	0.000	Pass
2	165.250	1.667	0.000	0.000	Pass
3	168.083	2.350	0.000	0.000	Pass
4	169.467	2.250	0.000	0.000	Pass
5	166.250	2.450	0.000	0.000	Pass
6	163.600	2.067	0.000	0.000	Pass
7	165.683	2.900	0.000	0.000	Pass
8	165.567	1.800	0.000	0.000	Pass
9	166.067	2.217	0.000	0.000	Pass
10	167.167	1.833	0.000	0.000	Pass

INCC 6.23.2.9 HM32 Not Validated

```
                  Facility: PPFF
      Material balance area: XXXX
             Detector type: UDL-1
               Detector id: AFAS-P BOTTOM
            Electronics id: PASS
          Measurement date: 24.08.02     14:01:22
         Results file name: 48200122.NOR
          Inspection number:
        Measurement option: Normalization
               Data source: IAEA DataZ file
     Detector configuration: Passive
                  QC tests: On
       Accidentals method: Measured
           Inspector name:
                  Comment:
           Ending comment: xx


                 Predelay:      1.500
              Gate length:     64.000
             High voltage:       1720
            Die away time:    50.0000
               Efficiency:     0.0127
     Multiplicity deadtime:     0.0000
    Coefficient A deadtime:     0.0000
    Coefficient B deadtime:     0.0000
   *Coefficient C deadtime:     0.0000
     Doubles gate fraction:     0.0001
     Triples gate fraction:     0.0001

    Passive singles bkgrnd:      1.563  +-      0.074
    Passive doubles bkgrnd:      0.038  +-      0.033
    Passive triples bkgrnd:      0.000  +-      0.000
    Passive scaler1 bkgrnd:      0.000
    Passive scaler2 bkgrnd:      0.000
          Number of cycles:         10
          Count time (sec):     60.000
```

Summed raw data

```
                Number of good cycles:         10
                    Total count time:        600
          Shift register singles sum:      70487
Shift register reals + accidentals sum:     1195
       Shift register accidentals sum:        531
        Shift register 1st scaler sum:          0
        Shift register 2nd scaler sum:          0
```

Summed multiplicity distributions

```
        R+A sums       A sums
```

Messages

Normalization test -- data quality is inadequate

Results

```
                    Singles:    115.915  +-      0.608
                    Doubles:      1.068  +-      0.087
                    Triples:      0.000  +-      0.000
```



```
                    Scaler 1:      0.000  +-      0.000
                    Scaler 2:      0.000  +-      0.000
```

Normalization results for reference source: H4-694

```
        Current normalization constant:      1.000  +-      0.000
           Cf252 expected singles rate:    114.467  +-      0.188
           Cf252 measured singles rate:    115.915  +-      0.608
        Singles rate expected/measured:      0.988  +-      0.040
            New normalization constant:      1.000  +-      0.000
                Normalization test  --  data quality is inadequate.
```

Cycle raw data

Count time (sec): 60.000

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	7245	137	45	0	0	Pass
2	7002	123	60	0	0	Pass
3	7001	116	51	0	0	Pass
4	6884	121	56	0	0	Pass
5	7057	114	49	0	0	Pass
6	7079	105	47	0	0	Pass
7	7160	141	46	0	0	Pass
8	7159	120	67	0	0	Pass
9	6912	117	59	0	0	Pass
10	6988	101	51	0	0	Pass

Cycle DTC rate data

Cycle	Singles	Doubles	Triples	QC Tests
1	119.187	1.495	0.000	Pass
2	115.137	1.012	0.000	Pass
3	115.120	1.045	0.000	Pass
4	113.170	1.045	0.000	Pass
5	116.053	1.045	0.000	Pass
6	116.420	0.928	0.000	Pass
7	117.770	1.545	0.000	Pass
8	117.753	0.845	0.000	Pass
9	113.637	0.928	0.000	Pass
10	114.903	0.795	0.000	Pass

INCC 5.1.2

```
                 Facility:  JMOX
   Material balance area:  JM2G
            Detector type:  AFAS
              Detector id:  JSR_01
           Electronics id:  JSR-12
  Inventory change code:
                 I/O code:
        Measurement date:  24.09.24  09:58:57
       Results file name:  490J5857.VER
       Inspection number:
                 Item id:  BWR TF
               Stratum id:  XXXX
            Material type:  Pu
 Original declared mass:  0.000
      Measurement option:  Verification
             Data source:  Review disk file
                QC tests:  On
       Error calculation:  Sample method
      Accidentals method:  Measured
          Inspector name:
         Passive comment:

            Isotopics id:  Default
  Isotopics source code:  OD
                  Pu238:    0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu239:    0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                  Pu241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu242:    0.0000 +-   0.0000      0.0000 +-   0.0000
                Pu date:  00.01.01                24.09.24
                  Am241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                Am date:  00.01.01                24.09.24

               Predelay:      1.50
            Gate length:     64.00
        2nd gate length:     64.00
           High voltage:   1720
          Die away time:     50.0000
             Efficiency:      0.0080
  Multiplicity deadtime:      0.0000
 Coefficient A deadtime:      0.0000
 Coefficient B deadtime:      0.0000
 Coefficient C deadtime:      0.0000
  Doubles gate fraction:      0.0001
  Triples gate fraction:      0.0001

 Normalization constant:      1.0000 +-    0.0000

 Passive singles bkgrnd:      0.000 +-     0.000
 Passive doubles bkgrnd:      0.000 +-     0.000
 Passive triples bkgrnd:      0.000 +-     0.000
 Passive scaler1 bkgrnd:      0.000
 Passive scaler2 bkgrnd:      0.000

  Number passive cycles:         10
        Count time (sec):         60
```

Passive error messages

Known alpha analysis error

Results

```
                    Singles:         69.918 +-     0.190
                    Doubles:          0.365 +-     0.037
                    Triples:          0.000 +-     0.000
                   Scaler 1:        117.778 +-     0.458
                   Scaler 2:          0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	4143	38	18	7163	0	Pass
2	4238	34	20	6950	0	Pass
3	4225	48	18	7062	0	Pass
4	4194	45	20	7011	0	Pass
5	4206	41	17	7159	0	Pass
6	4248	32	20	7032	0	Pass
7	4198	44	19	6993	0	Pass
8	4144	49	17	7186	0	Pass
9	4186	49	25	6977	0	Pass
10	4169	33	20	7134	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	69.050	0.333	0.000	0.000	Pass
2	70.633	0.233	0.000	0.000	Pass
3	70.417	0.500	0.000	0.000	Pass
4	69.900	0.417	0.000	0.000	Pass
5	70.100	0.400	0.000	0.000	Pass
6	70.800	0.200	0.000	0.000	Pass
7	69.967	0.417	0.000	0.000	Pass
8	69.067	0.533	0.000	0.000	Pass
9	69.767	0.400	0.000	0.000	Pass
10	69.483	0.217	0.000	0.000	Pass

INCC 5.1.2

```
               Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_01
         Electronics id:  JSR-12
  Inventory change code:
              I/O code:
      Measurement date:  24.09.24  10:16:02
     Results file name:  490K1602.VER
     Inspection number:
               Item id:  BWR COLLAR
            Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
    Measurement option:  Verification
           Data source:  Review disk file
              QC tests:  On
     Error calculation:  Sample method
    Accidentals method:  Measured
        Inspector name:
       Passive comment:

           Isotopics id:  Default
  Isotopics source code:  OD
                  Pu238:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu239:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                  Pu241:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu242:   0.0000 +-   0.0000      0.0000 +-   0.0000
                Pu date:  00.01.01               24.09.24
                  Am241:   0.0000 +-   0.0000      0.0000 +-   0.0000
                Am date:  00.01.01               24.09.24

               Predelay:      1.50
            Gate length:     64.00
        2nd gate length:     64.00
           High voltage:   1720
         Die away time:     50.0000
            Efficiency:      0.1970
  Multiplicity deadtime:    160.0000
 Coefficient A deadtime:      0.6419
 Coefficient B deadtime:      0.1030
 Coefficient C deadtime:      0.0000
  Doubles gate fraction:      0.0001
  Triples gate fraction:      0.0001

 Normalization constant:      1.0000 +-    0.0000

 Passive singles bkgrnd:      0.000 +-     0.000
 Passive doubles bkgrnd:      0.000 +-     0.000
 Passive triples bkgrnd:      0.000 +-     0.000
 Passive scaler1 bkgrnd:      0.000
 Passive scaler2 bkgrnd:      0.000

  Number passive cycles:         10
       Count time (sec):         60

Passive error messages

Known alpha analysis error
```


Results

```
                 Singles:      2223.502 +-     2.198
                 Doubles:       474.811 +-     1.540
                 Triples:         0.000 +-     0.000
               Scaler 1:         7.962 +-     0.140
               Scaler 2:         0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	133702	47879	19099	452	0	Pass
2	133510	47234	18929	486	0	Pass
3	133565	47568	18949	522	0	Pass
4	133435	47165	19205	450	0	Pass
5	132988	46979	18358	484	0	Pass
6	133234	47565	18717	457	0	Pass
7	134066	47732	19168	498	0	Pass
8	132773	47034	18818	504	0	Pass
9	133570	47000	18549	482	0	Pass
10	132782	46861	18745	442	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	2229.164	480.354	0.000	0.000	Pass
2	2225.962	472.425	0.000	0.000	Pass
3	2226.879	477.666	0.000	0.000	Pass
4	2224.711	466.666	0.000	0.000	Pass
5	2217.255	477.696	0.000	0.000	Pass
6	2221.358	481.486	0.000	0.000	Pass
7	2235.235	476.750	0.000	0.000	Pass
8	2213.670	470.935	0.000	0.000	Pass
9	2226.962	474.862	0.000	0.000	Pass
10	2213.820	469.266	0.000	0.000	Pass

INCC 5.1.2

```
               Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_02
         Electronics id:  JSR-12
  Inventory change code:
              I/O code:
      Measurement date:  24.09.24  10:30:48
     Results file name:  490K3048.VER
     Inspection number:
               Item id:  BWR BF
            Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
    Measurement option:  Verification
           Data source:  Review disk file
              QC tests:  On
     Error calculation:  Sample method
    Accidentals method:  Measured
        Inspector name:
       Passive comment:

           Isotopics id:  Default
  Isotopics source code:  OD
                  Pu238:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu239:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                  Pu241:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu242:   0.0000 +-   0.0000      0.0000 +-   0.0000
                Pu date:  00.01.01               24.09.24
                  Am241:   0.0000 +-   0.0000      0.0000 +-   0.0000
                Am date:  00.01.01               24.09.24

               Predelay:      1.50
            Gate length:     64.00
        2nd gate length:     64.00
           High voltage:   1720
         Die away time:     50.0000
            Efficiency:      0.0060
  Multiplicity deadtime:      0.0000
 Coefficient A deadtime:      0.0000
 Coefficient B deadtime:      0.0000
 Coefficient C deadtime:      0.0000
  Doubles gate fraction:      0.0001
  Triples gate fraction:      0.0001

 Normalization constant:      1.0000 +-    0.0000

 Passive singles bkgrnd:      0.000 +-     0.000
 Passive doubles bkgrnd:      0.000 +-     0.000
 Passive triples bkgrnd:      0.000 +-     0.000
 Passive scaler1 bkgrnd:      0.000
 Passive scaler2 bkgrnd:      0.000

  Number passive cycles:         10
       Count time (sec):         60

Passive error messages

No known alpha calibration
```


Results

```
                 Singles:       121.247 +-     0.510
                 Doubles:         1.267 +-     0.072
                 Triples:         0.000 +-     0.000
               Scaler 1:         4.075 +-     0.089
               Scaler 2:         0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	7355	150	74	250	0	Pass
2	7123	121	68	252	0	Pass
3	7222	137	51	258	0	Pass
4	7312	116	42	259	0	Pass
5	7243	137	55	226	0	Pass
6	7271	156	60	221	0	Pass
7	7304	123	64	252	0	Pass
8	7342	144	52	257	0	Pass
9	7436	130	60	255	0	Pass
10	7140	122	50	215	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	122.583	1.267	0.000	0.000	Pass
2	118.717	0.883	0.000	0.000	Pass
3	120.367	1.433	0.000	0.000	Pass
4	121.867	1.233	0.000	0.000	Pass
5	120.717	1.367	0.000	0.000	Pass
6	121.183	1.600	0.000	0.000	Pass
7	121.733	0.983	0.000	0.000	Pass
8	122.367	1.533	0.000	0.000	Pass
9	123.933	1.167	0.000	0.000	Pass
10	119.000	1.200	0.000	0.000	Pass

INCC 5.1.2

```
              Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_02
        Electronics id:  JSR-12
  Inventory change code:
              I/O code:
      Measurement date:  24.09.24  10:45:52
     Results file name:  490K4552.VER
     Inspection number:
               Item id:  PWR TF
            Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
    Measurement option:  Verification
           Data source:  Review disk file
              QC tests:  On
     Error calculation:  Sample method
    Accidentals method:  Measured
        Inspector name:
       Passive comment:

          Isotopics id:  Default
  Isotopics source code:  OD
                 Pu238:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu239:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                 Pu241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu242:    0.0000 +-   0.0000      0.0000 +-   0.0000
              Pu date:  00.01.01                24.09.24
                Am241:    0.0000 +-   0.0000      0.0000 +-   0.0000
              Am date:  00.01.01                24.09.24

              Predelay:      1.50
           Gate length:     64.00
       2nd gate length:     64.00
          High voltage:   1720
         Die away time:     50.0000
            Efficiency:      0.0126
 Multiplicity deadtime:      0.0000
Coefficient A deadtime:      0.0000
Coefficient B deadtime:      0.0000
Coefficient C deadtime:      0.0000
 Doubles gate fraction:      0.0001
 Triples gate fraction:      0.0001

Normalization constant:      1.0000 +-    0.0000

Passive singles bkgrnd:      0.000 +-     0.000
Passive doubles bkgrnd:      0.000 +-     0.000
Passive triples bkgrnd:      0.000 +-     0.000
Passive scaler1 bkgrnd:      0.000
Passive scaler2 bkgrnd:      0.000

 Number passive cycles:         10
      Count time (sec):         60
```

Passive error messages

No known alpha calibration

Results

```
                 Singles:          2.377 +-     0.086
                 Doubles:          0.000 +-     0.000
                 Triples:          0.000 +-     0.000
                Scaler 1:        105.612 +-     0.310
                Scaler 2:          0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	167	0	0	6452	0	Pass
2	128	0	0	6354	0	Pass
3	160	0	0	6315	0	Pass
4	136	0	0	6242	0	Pass
5	143	0	0	6333	0	Pass
6	147	0	0	6365	0	Pass
7	164	0	0	6285	0	Pass
8	132	0	0	6385	0	Pass
9	125	0	0	6346	0	Pass
10	124	0	0	6290	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	2.783	0.000	0.000	0.000	Pass
2	2.133	0.000	0.000	0.000	Pass
3	2.667	0.000	0.000	0.000	Pass
4	2.267	0.000	0.000	0.000	Pass
5	2.383	0.000	0.000	0.000	Pass
6	2.450	0.000	0.000	0.000	Pass
7	2.733	0.000	0.000	0.000	Pass
8	2.200	0.000	0.000	0.000	Pass
9	2.083	0.000	0.000	0.000	Pass
10	2.067	0.000	0.000	0.000	Pass

INCC 6.23.2.9 HM32 Not Validated

```
                 Facility: PPFF
   Material balance area: XXXX
           Detector type: PASS
             Detector id: AFAS-P TOP
         Electronics id: UDL-1
      Measurement date: 24.09.24     11:03:08
       Results file name: 490L0308.NOR
       Inspection number:
      Measurement option: Normalization
             Data source: IAEA DataZ file
  Detector configuration: Passive
               QC tests: On
     Accidentals method: Measured
         Inspector name:
                Comment:
         Ending comment: xx


              Predelay:      1.500
           Gate length:     64.000
          High voltage:       1720
         Die away time:     50.0000
            Efficiency:      0.0126
 Multiplicity deadtime:      0.0000
Coefficient A deadtime:      0.0000
Coefficient B deadtime:      0.0000
*Coefficient C deadtime:     0.0000
 Doubles gate fraction:      0.0001
 Triples gate fraction:      0.0001

Passive singles bkgrnd:      2.127  +-      0.045
Passive doubles bkgrnd:      0.000  +-      0.000
Passive triples bkgrnd:      0.000  +-      0.000
Passive scaler1 bkgrnd:      0.000
Passive scaler2 bkgrnd:      0.000
      Number of cycles:         10
      Count time (sec):     60.000
```

Summed raw data

```
            Number of good cycles:         10
                 Total count time:        600
       Shift register singles sum:      63529
Shift register reals + accidentals sum:   1035
   Shift register accidentals sum:        439
    Shift register 1st scaler sum:          0
    Shift register 2nd scaler sum:          0
```

Summed multiplicity distributions

R+A sums A sums

Messages

Normalization test -- data quality is inadequate

Results

```
                 Singles:    103.755  +-      0.448
                 Doubles:      0.993  +-      0.068
                 Triples:      0.000  +-      0.000
```



```
                Scaler 1:      0.000  +-      0.000
                Scaler 2:      0.000  +-      0.000
```

Normalization results for reference source: H4-694

```
      Current normalization constant:      1.000  +-      0.000
         Cf252 expected singles rate:    102.829  +-      0.230
         Cf252 measured singles rate:    103.755  +-      0.448
      Singles rate expected/measured:      0.991  +-      0.040
          New normalization constant:      1.000  +-      0.000
              Normalization test  --  data quality is inadequate.
```

Cycle raw data

Count time (sec): 60.000

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	6501	94	48	0	0	Pass
2	6331	101	47	0	0	Pass
3	6380	92	49	0	0	Pass
4	6244	93	46	0	0	Pass
5	6303	111	44	0	0	Pass
6	6330	113	40	0	0	Pass
7	6340	106	37	0	0	Pass
8	6410	96	47	0	0	Pass
9	6238	113	42	0	0	Pass
10	6452	116	39	0	0	Pass

Cycle DTC rate data

Cycle	Singles	Doubles	Triples	QC Tests
1	106.223	0.767	0.000	Pass
2	103.390	0.900	0.000	Pass
3	104.207	0.717	0.000	Pass
4	101.940	0.783	0.000	Pass
5	102.923	1.117	0.000	Pass
6	103.373	1.217	0.000	Pass
7	103.540	1.150	0.000	Pass
8	104.707	0.817	0.000	Pass
9	101.840	1.183	0.000	Pass
10	105.407	1.283	0.000	Pass

INCC 5.1.2

```
              Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_03
         Electronics id:  JSR-12
  Inventory change code:
               I/O code:
      Measurement date:  24.09.24  11:03:26
     Results file name:  490L0326.VER
     Inspection number:
               Item id:  PWR COLLAR
            Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
    Measurement option:  Verification
           Data source:  Review disk file
              QC tests:  On
     Error calculation:  Sample method
    Accidentals method:  Measured
        Inspector name:
       Passive comment:

          Isotopics id:  Default
  Isotopics source code:  OD
                 Pu238:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu239:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                 Pu241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu242:    0.0000 +-   0.0000      0.0000 +-   0.0000
              Pu date:  00.01.01                24.09.24
                Am241:    0.0000 +-   0.0000      0.0000 +-   0.0000
              Am date:  00.01.01                24.09.24

               Predelay:      1.50
           Gate length:     64.00
       2nd gate length:     64.00
          High voltage:   1720
        Die away time:     50.0000
            Efficiency:     0.1620
 Multiplicity deadtime:    86.5000
Coefficient A deadtime:     0.3458
Coefficient B deadtime:     0.0299
Coefficient C deadtime:     0.0000
 Doubles gate fraction:     0.0001
 Triples gate fraction:     0.0001

Normalization constant:     1.0000 +-    0.0000

Passive singles bkgrnd:     0.000 +-     0.000
Passive doubles bkgrnd:     0.000 +-     0.000
Passive triples bkgrnd:     0.000 +-     0.000
Passive scaler1 bkgrnd:     0.000
Passive scaler2 bkgrnd:     0.000

 Number passive cycles:        10
      Count time (sec):        60
```

Passive error messages

No passive calibration curve calibration
No known alpha calibration

Results

```
                Singles:      1821.849 +-     2.086
                Doubles:       311.715 +-     1.305
                Triples:         0.000 +-     0.000
               Scaler 1:        16.187 +-     0.146
               Scaler 2:         0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	108438	31019	12286	1026	0	Pass
2	109276	31555	12911	948	0	Pass
3	109153	31448	12711	965	0	Pass
4	109254	31558	12637	976	0	Pass
5	109352	31259	12898	939	0	Pass
6	109407	31491	12720	954	0	Pass
7	109852	31951	12807	1012	0	Pass
8	108997	31173	12823	964	0	Pass
9	109756	31518	13045	955	0	Pass
10	109452	31570	12793	973	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	1807.582	312.412	0.000	0.000	Pass
2	1821.553	310.929	0.000	0.000	Pass
3	1819.503	312.480	0.000	0.000	Pass
4	1821.187	315.549	0.000	0.000	Pass
5	1822.821	306.210	0.000	0.000	Pass
6	1823.738	313.047	0.000	0.000	Pass
7	1831.157	319.269	0.000	0.000	Pass
8	1816.902	306.026	0.000	0.000	Pass
9	1829.556	308.078	0.000	0.000	Pass
10	1824.488	313.148	0.000	0.000	Pass

INCC 6.23.2.9 HM32 Not Validated

```
                 Facility: PPFF
     Material balance area: XXXX
             Detector type: PASS
               Detector id: AFAS-P COLLAR
            Electronics id: UDL-1
        Measurement date: 24.09.24     11:19:26
        Results file name: 490L1926.NOR
         Inspection number:
        Measurement option: Normalization
               Data source: IAEA DataZ file
   Detector configuration: Passive
                 QC tests: On
       Accidentals method: Measured
           Inspector name:
                  Comment:
           Ending comment: xx


                 Predelay:      1.500
             Gate length:     64.000
            High voltage:       1720
           Die away time:    50.0000
               Efficiency:     0.1620
     Multiplicity deadtime:    86.5000
    Coefficient A deadtime:     0.3458
    Coefficient B deadtime:     0.0299
   *Coefficient C deadtime:     0.0000
     Doubles gate fraction:     0.0001
     Triples gate fraction:     0.0001

    Passive singles bkgrnd:    13.117  +-      0.128
    Passive doubles bkgrnd:     0.005  +-      0.009
    Passive triples bkgrnd:     0.000  +-      0.000
    Passive scaler1 bkgrnd:     0.000
    Passive scaler2 bkgrnd:     0.000
          Number of cycles:        10
          Count time (sec):    60.000
```

Summed raw data

```
                Number of good cycles:        10
                     Total count time:       600
           Shift register singles sum:   1091881
Shift register reals + accidentals sum:   314524
        Shift register accidentals sum:   126613
         Shift register 1st scaler sum:        0
         Shift register 2nd scaler sum:        0
```

Summed multiplicity distributions

R+A sums A sums

Messages

Normalization test -- data quality is inadequate

Results

```
                Singles:   1806.971  +-      2.034
                Doubles:    313.377  +-      1.439
                Triples:      0.000  +-      0.000
```



```
               Scaler 1:      0.000  +-      0.000
               Scaler 2:      0.000  +-      0.000
```

Normalization results for reference source: H4-694

```
          Current normalization constant:      1.000  +-      0.000
             Cf252 expected doubles rate:    304.827  +-      0.463
             Cf252 measured doubles rate:    313.377  +-      1.439
          Doubles rate expected/measured:      0.973  +-      0.005
              New normalization constant:      1.000  +-      0.000
                  Normalization test  --  data quality is inadequate.
              Measured percent precision:      0.459
              Required percent precision:      0.300
         Repeat measurement for at least:      0.000
```

Cycle raw data

Count time (sec): 60.000

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	108863	31035	12429	0	0	Pass
2	109125	31205	12736	0	0	Pass
3	108430	31182	12632	0	0	Pass
4	109496	31764	12865	0	0	Pass
5	109045	31464	12771	0	0	Pass
6	109280	31612	12646	0	0	Pass
7	109198	31299	12569	0	0	Pass
8	109607	31680	12537	0	0	Pass
9	109768	31963	12677	0	0	Pass
10	109069	31320	12751	0	0	Pass

Cycle DTC rate data

Cycle	Singles	Doubles	Triples	QC Tests
1	1801.551	310.290	0.000	Pass
2	1805.919	308.005	0.000	Pass
3	1794.332	309.355	0.000	Pass
4	1812.105	315.177	0.000	Pass
5	1804.586	311.741	0.000	Pass
6	1808.503	316.294	0.000	Pass
7	1807.136	312.358	0.000	Pass
8	1813.955	319.247	0.000	Pass
9	1816.639	321.632	0.000	Pass
10	1804.986	309.673	0.000	Pass

INCC 5.1.2

```
              Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_03
         Electronics id:  JSR-12
  Inventory change code:
               I/O code:
      Measurement date:  24.09.24  11:19:31
     Results file name:  490L1931.VER
     Inspection number:
               Item id:  PWR BF
            Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
    Measurement option:  Verification
           Data source:  Review disk file
              QC tests:  On
     Error calculation:  Sample method
    Accidentals method:  Measured
        Inspector name:
       Passive comment:

          Isotopics id:  Default
  Isotopics source code:  OD
                 Pu238:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu239:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                 Pu241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu242:    0.0000 +-   0.0000      0.0000 +-   0.0000
               Pu date:  00.01.01                24.09.24
                 Am241:    0.0000 +-   0.0000      0.0000 +-   0.0000
               Am date:  00.01.01                24.09.24

              Predelay:      1.50
          Gate length:     64.00
       2nd gate length:     64.00
         High voltage:   1720
        Die away time:     50.0000
           Efficiency:      0.0127
 Multiplicity deadtime:     0.0000
Coefficient A deadtime:     0.0000
Coefficient B deadtime:     0.0000
Coefficient C deadtime:     0.0000
 Doubles gate fraction:     0.0001
 Triples gate fraction:     0.0001

Normalization constant:     1.0000 +-    0.0000

Passive singles bkgrnd:     0.000 +-     0.000
Passive doubles bkgrnd:     0.000 +-     0.000
Passive triples bkgrnd:     0.000 +-     0.000
Passive scaler1 bkgrnd:     0.000
Passive scaler2 bkgrnd:     0.000

 Number passive cycles:        10
      Count time (sec):        60
```

Passive error messages

No passive calibration curve calibration
No known alpha calibration

Results

```
                 Singles:      159.468 +-     0.528
                 Doubles:        2.132 +-     0.119
                 Triples:        0.000 +-     0.000
                Scaler 1:      112.553 +-     0.464
                Scaler 2:        0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	9538	245	88	6744	0	Pass
2	9650	251	98	6622	0	Pass
3	9546	214	85	6602	0	Pass
4	9450	221	97	6766	0	Pass
5	9636	229	102	6738	0	Pass
6	9575	232	101	6902	0	Pass
7	9664	202	97	6764	0	Pass
8	9710	215	93	6807	0	Pass
9	9524	180	98	6773	0	Pass
10	9388	241	92	6814	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	158.967	2.617	0.000	0.000	Pass
2	160.833	2.550	0.000	0.000	Pass
3	159.100	2.150	0.000	0.000	Pass
4	157.500	2.067	0.000	0.000	Pass
5	160.600	2.117	0.000	0.000	Pass
6	159.583	2.183	0.000	0.000	Pass
7	161.067	1.750	0.000	0.000	Pass
8	161.833	2.033	0.000	0.000	Pass
9	158.733	1.367	0.000	0.000	Pass
10	156.467	2.483	0.000	0.000	Pass

INCC 6.23.2.9 HM32 Not Validated

```
                 Facility: PPFF
   Material balance area: XXXX
           Detector type: UDL-1
             Detector id: AFAS-P BOTTOM
          Electronics id: PASS
       Measurement date: 24.09.24     11:36:18
      Results file name: 490L3618.NOR
      Inspection number:
     Measurement option: Normalization
            Data source: IAEA DataZ file
  Detector configuration: Passive
               QC tests: On
     Accidentals method: Measured
         Inspector name:
                Comment:
          Ending comment: xx


              Predelay:      1.500
          Gate length:     64.000
         High voltage:       1720
        Die away time:    50.0000
           Efficiency:     0.0127
 Multiplicity deadtime:     0.0000
Coefficient A deadtime:     0.0000
Coefficient B deadtime:     0.0000
*Coefficient C deadtime:    0.0000
 Doubles gate fraction:     0.0001
 Triples gate fraction:     0.0001

Passive singles bkgrnd:     1.487  +-      0.045
Passive doubles bkgrnd:     0.000  +-      0.000
Passive triples bkgrnd:     0.000  +-      0.000
Passive scaler1 bkgrnd:     0.000
Passive scaler2 bkgrnd:     0.000
     Number of cycles:        10
     Count time (sec):    60.000
```

Summed raw data

```
          Number of good cycles:        10
                Total count time:       600
       Shift register singles sum:     67510
Shift register reals + accidentals sum:  1180
   Shift register accidentals sum:       439
    Shift register 1st scaler sum:         0
    Shift register 2nd scaler sum:         0
```

Summed multiplicity distributions

R+A sums A sums

Messages

Normalization test -- data quality is inadequate

Results

```
                 Singles:    111.030  +-      0.546
                 Doubles:      1.235  +-      0.052
                 Triples:      0.000  +-      0.000
```



```
                Scaler 1:      0.000  +-      0.000
                Scaler 2:      0.000  +-      0.000
```

Normalization results for reference source: H4-694

```
      Current normalization constant:      1.000  +-      0.000
         Cf252 expected singles rate:    110.204  +-      0.181
         Cf252 measured singles rate:    111.030  +-      0.546
      Singles rate expected/measured:      0.993  +-      0.040
          New normalization constant:      1.000  +-      0.000
              Normalization test  --  data quality is inadequate.
```

Cycle raw data

Count time (sec): 60.000

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	6835	129	49	0	0	Pass
2	6715	125	42	0	0	Pass
3	6677	129	43	0	0	Pass
4	6527	107	41	0	0	Pass
5	6723	126	36	0	0	Pass
6	6733	117	51	0	0	Pass
7	6883	100	38	0	0	Pass
8	6765	112	42	0	0	Pass
9	6858	122	49	0	0	Pass
10	6794	113	48	0	0	Pass

Cycle DTC rate data

Cycle	Singles	Doubles	Triples	QC Tests
1	112.430	1.333	0.000	Pass
2	110.430	1.383	0.000	Pass
3	109.797	1.433	0.000	Pass
4	107.297	1.100	0.000	Pass
5	110.563	1.500	0.000	Pass
6	110.730	1.100	0.000	Pass
7	113.230	1.033	0.000	Pass
8	111.263	1.167	0.000	Pass
9	112.813	1.217	0.000	Pass
10	111.747	1.083	0.000	Pass

INCC 5.1.2

```
               Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_01
         Electronics id:  JSR-12
  Inventory change code:
              I/O code:
      Measurement date:  24.10.11  10:22:06
     Results file name:  4ABK2206.VER
     Inspection number:
               Item id:  BWR TF
            Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
    Measurement option:  Verification
           Data source:  Review disk file
              QC tests:  On
     Error calculation:  Sample method
    Accidentals method:  Measured
        Inspector name:
       Passive comment:

          Isotopics id:  Default
  Isotopics source code:  OD
                 Pu238:   0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu239:   0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                 Pu241:   0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu242:   0.0000 +-   0.0000      0.0000 +-   0.0000
               Pu date:  00.01.01               24.10.11
                 Am241:   0.0000 +-   0.0000      0.0000 +-   0.0000
               Am date:  00.01.01               24.10.11

              Predelay:      1.50
           Gate length:     64.00
       2nd gate length:     64.00
         High voltage:   1720
        Die away time:     50.0000
           Efficiency:      0.0080
 Multiplicity deadtime:     0.0000
Coefficient A deadtime:     0.0000
Coefficient B deadtime:     0.0000
Coefficient C deadtime:     0.0000
 Doubles gate fraction:     0.0001
 Triples gate fraction:     0.0001

Normalization constant:     1.0000 +-    0.0000
Passive singles bkgrnd:     0.000 +-     0.000
Passive doubles bkgrnd:     0.000 +-     0.000
Passive triples bkgrnd:     0.000 +-     0.000
Passive scaler1 bkgrnd:     0.000
Passive scaler2 bkgrnd:     0.000

 Number passive cycles:        10
      Count time (sec):        60
```

Passive error messages

Known alpha analysis error

Passive results


```
                 Singles:      68.953 +-     0.402
                 Doubles:       0.332 +-     0.051
                 Triples:       0.000 +-     0.000
                Scaler 1:     116.028 +-     0.255
                Scaler 2:       0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	4039	47	18	6954	0	Pass
2	4217	39	15	6971	0	Pass
3	4094	50	20	6942	0	Pass
4	4085	38	16	6952	0	Pass
5	4109	41	16	6952	0	Pass
6	4126	44	19	6990	0	Pass
7	4258	39	22	6886	0	Pass
8	4244	32	22	6965	0	Pass
9	4133	38	19	6930	0	Pass
10	4067	27	29	7075	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	67.317	0.483	0.000	0.000	Pass
2	70.283	0.400	0.000	0.000	Pass
3	68.233	0.500	0.000	0.000	Pass
4	68.083	0.367	0.000	0.000	Pass
5	68.483	0.417	0.000	0.000	Pass
6	68.767	0.417	0.000	0.000	Pass
7	70.967	0.283	0.000	0.000	Pass
8	70.733	0.167	0.000	0.000	Pass
9	68.883	0.317	0.000	0.000	Pass
10	67.783	-0.033	0.000	0.000	Pass

INCC 5.1.2

```
               Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_01
         Electronics id:  JSR-12
  Inventory change code:
              I/O code:
      Measurement date:  24.10.11  10:39:11
     Results file name:  4ABK3911.VER
     Inspection number:
               Item id:  BWR COLLAR
            Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
    Measurement option:  Verification
           Data source:  Review disk file
              QC tests:  On
     Error calculation:  Sample method
    Accidentals method:  Measured
        Inspector name:
       Passive comment:

          Isotopics id:  Default
  Isotopics source code:  OD
                 Pu238:   0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu239:   0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                 Pu241:   0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu242:   0.0000 +-   0.0000      0.0000 +-   0.0000
               Pu date:  00.01.01               24.10.11
                 Am241:   0.0000 +-   0.0000      0.0000 +-   0.0000
               Am date:  00.01.01               24.10.11

              Predelay:      1.50
           Gate length:     64.00
       2nd gate length:     64.00
         High voltage:   1720
        Die away time:     50.0000
           Efficiency:      0.1970
 Multiplicity deadtime:    160.0000
Coefficient A deadtime:     0.6419
Coefficient B deadtime:     0.1030
Coefficient C deadtime:     0.0000
 Doubles gate fraction:     0.0001
 Triples gate fraction:     0.0001

Normalization constant:     1.0000 +-    0.0000
Passive singles bkgrnd:     0.000 +-     0.000
Passive doubles bkgrnd:     0.000 +-     0.000
Passive triples bkgrnd:     0.000 +-     0.000
Passive scaler1 bkgrnd:     0.000
Passive scaler2 bkgrnd:     0.000

 Number passive cycles:        10
      Count time (sec):        60
```

Passive error messages

Known alpha analysis error

Passive results


```
                 Singles:    2199.620 +-     3.212
                 Doubles:     467.046 +-     2.020
                 Triples:       0.000 +-     0.000
                Scaler 1:       8.138 +-     0.116
                Scaler 2:       0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	132037	46724	18964	474	0	Pass
2	131633	46493	18607	455	0	Pass
3	132555	46878	18517	527	0	Pass
4	132267	46711	18684	500	0	Pass
5	131840	46796	18410	489	0	Pass
6	131811	46533	18211	494	0	Pass
7	130596	45526	18359	490	0	Pass
8	131857	46263	18465	492	0	Pass
9	132887	47255	18944	456	0	Pass
10	131823	46426	18612	506	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	2201.394	463.321	0.000	0.000	Pass
2	2194.656	465.422	0.000	0.000	Pass
3	2210.034	473.354	0.000	0.000	Pass
4	2205.230	467.778	0.000	0.000	Pass
5	2198.109	473.768	0.000	0.000	Pass
6	2197.625	472.700	0.000	0.000	Pass
7	2177.361	453.417	0.000	0.000	Pass
8	2198.392	463.954	0.000	0.000	Pass
9	2215.571	472.522	0.000	0.000	Pass
10	2197.825	464.221	0.000	0.000	Pass

INCC 5.1.2

Facility:	JMOX
Material balance area:	JM2G
Detector type:	AFAS
Detector id:	JSR_02
Electronics id:	JSR-12
Inventory change code:	
I/O code:	
Measurement date:	24.10.11 10:55:13
Results file name:	4ABK5513.VER
Inspection number:	
Item id:	BWR BF
Stratum id:	XXXX
Material type:	Pu
Original declared mass:	0.000
Measurement option:	Verification
Data source:	Review disk file
QC tests:	On
Error calculation:	Sample method
Accidentals method:	Measured
Inspector name:	
Passive comment:	

Isotopics id:	Default			
Isotopics source code:	OD			
Pu238:	0.0000 +-	0.0000	0.0000 +-	0.0000
Pu239:	0.0000 +-	0.0000	0.0000 +-	0.0000
Pu240:	100.0000 +-	0.0000	100.0000 +-	0.0000
Pu241:	0.0000 +-	0.0000	0.0000 +-	0.0000
Pu242:	0.0000 +-	0.0000	0.0000 +-	0.0000
Pu date:	00.01.01		24.10.11	
Am241:	0.0000 +-	0.0000	0.0000 +-	0.0000
Am date:	00.01.01		24.10.11	

Predelay:	1.50
Gate length:	64.00
2nd gate length:	64.00
High voltage:	1720
Die away time:	50.0000
Efficiency:	0.0060
Multiplicity deadtime:	0.0000
Coefficient A deadtime:	0.0000
Coefficient B deadtime:	0.0000
Coefficient C deadtime:	0.0000
Doubles gate fraction:	0.0001
Triples gate fraction:	0.0001

Normalization constant:	1.0000 +-	0.0000
Passive singles bkgrnd:	0.000 +-	0.000
Passive doubles bkgrnd:	0.000 +-	0.000
Passive triples bkgrnd:	0.000 +-	0.000
Passive scaler1 bkgrnd:	0.000	
Passive scaler2 bkgrnd:	0.000	

Number passive cycles:	10
Count time (sec):	60

Passive error messages

No known alpha calibration

Results

Singles:	120.603 +-	0.320
Doubles:	1.268 +-	0.052
Triples:	0.000 +-	0.000
Scaler 1:	4.307 +-	0.131
Scaler 2:	0.000 +-	0.000

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	7185	124	40	234	0	Pass
2	7276	142	57	252	0	Pass
3	7271	122	62	260	0	Pass
4	7142	134	68	240	0	Pass
5	7282	133	52	265	0	Pass
6	7210	126	56	305	0	Pass
7	7178	137	51	263	0	Pass
8	7345	141	74	292	0	Pass
9	7257	133	58	225	0	Pass
10	7216	146	59	248	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	119.750	1.400	0.000	0.000	Pass
2	121.267	1.417	0.000	0.000	Pass
3	121.183	1.000	0.000	0.000	Pass
4	119.033	1.100	0.000	0.000	Pass
5	121.367	1.350	0.000	0.000	Pass
6	120.167	1.167	0.000	0.000	Pass
7	119.633	1.433	0.000	0.000	Pass
8	122.417	1.117	0.000	0.000	Pass
9	120.950	1.250	0.000	0.000	Pass
10	120.267	1.450	0.000	0.000	Pass

INCC 5.1.2

Facility:	JMOX
Material balance area:	JM2G
Detector type:	AFAS
Detector id:	JSR_02
Electronics id:	JSR-12
Inventory change code:	
I/O code:	
Measurement date:	24.10.11 11:12:18
Results file name:	4ABL1218.VER
Inspection number:	
Item id:	PWR TF
Stratum id:	XXXX
Material type:	Pu
Original declared mass:	0.000
Measurement option:	Verification
Data source:	Review disk file
QC tests:	On
Error calculation:	Sample method
Accidentals method:	Measured
Inspector name:	
Passive comment:	

Isotopics id:	Default			
Isotopics source code:	OD			
Pu238:	0.0000 +-	0.0000	0.0000 +-	0.0000
Pu239:	0.0000 +-	0.0000	0.0000 +-	0.0000
Pu240:	100.0000 +-	0.0000	100.0000 +-	0.0000
Pu241:	0.0000 +-	0.0000	0.0000 +-	0.0000
Pu242:	0.0000 +-	0.0000	0.0000 +-	0.0000
Pu date:	00.01.01		24.10.11	
Am241:	0.0000 +-	0.0000	0.0000 +-	0.0000
Am date:	00.01.01		24.10.11	

Predelay:	1.50
Gate length:	64.00
2nd gate length:	64.00
High voltage:	1720
Die away time:	50.0000
Efficiency:	0.0126
Multiplicity deadtime:	0.0000
Coefficient A deadtime:	0.0000
Coefficient B deadtime:	0.0000
Coefficient C deadtime:	0.0000
Doubles gate fraction:	0.0001
Triples gate fraction:	0.0001

Normalization constant:	1.0000 +-	0.0000
Passive singles bkgrnd:	0.000 +-	0.000
Passive doubles bkgrnd:	0.000 +-	0.000
Passive triples bkgrnd:	0.000 +-	0.000
Passive scaler1 bkgrnd:	0.000	
Passive scaler2 bkgrnd:	0.000	

Number passive cycles:	10
Count time (sec):	60

Passive error messages

No known alpha calibration

Results

Singles:	2.537 +-	0.066
Doubles:	0.000 +-	0.000
Triples:	0.000 +-	0.000
Scaler 1:	104.392 +-	0.396
Scaler 2:	0.000 +-	0.000

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	142	0	0	6156	0	Pass
2	135	0	0	6296	0	Pass
3	134	0	0	6276	0	Pass
4	162	0	0	6385	0	Pass
5	157	0	0	6246	0	Pass
6	166	0	0	6188	0	Pass
7	148	0	0	6322	0	Pass
8	148	0	0	6305	0	Pass
9	168	0	0	6301	0	Pass
10	162	0	0	6160	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	2.367	0.000	0.000	0.000	Pass
2	2.250	0.000	0.000	0.000	Pass
3	2.233	0.000	0.000	0.000	Pass
4	2.700	0.000	0.000	0.000	Pass
5	2.617	0.000	0.000	0.000	Pass
6	2.767	0.000	0.000	0.000	Pass
7	2.467	0.000	0.000	0.000	Pass
8	2.467	0.000	0.000	0.000	Pass
9	2.800	0.000	0.000	0.000	Pass
10	2.700	0.000	0.000	0.000	Pass

INCC 6.23.2.9 HM32 Not Validated

```
                  Facility: PPFF
      Material balance area: XXXX
             Detector type: PASS
               Detector id: AFAS-P TOP
           Electronics id: UDL-1
         Measurement date: 24.10.11     11:34:11
        Results file name: 4ABL3411.NOR
         Inspection number:
       Measurement option: Normalization
              Data source: IAEA DataZ file
     Detector configuration: Passive
                 QC tests: On
      Accidentals method: Measured
          Inspector name:
                 Comment:
          Ending comment: xx


                Predelay:      1.500
             Gate length:     64.000
             High voltage:      1720
            Die away time:    50.0000
               Efficiency:    0.0126
     Multiplicity deadtime:    0.0000
    Coefficient A deadtime:    0.0000
    Coefficient B deadtime:    0.0000
   *Coefficient C deadtime:    0.0000
     Doubles gate fraction:    0.0001
     Triples gate fraction:    0.0001

    Passive singles bkgrnd:     2.142  +-      0.056
    Passive doubles bkgrnd:     0.000  +-      0.000
    Passive triples bkgrnd:     0.000  +-      0.000
    Passive scaler1 bkgrnd:     0.000
    Passive scaler2 bkgrnd:     0.000
          Number of cycles:        10
          Count time (sec):    60.000
```

Summed raw data

```
                Number of good cycles:        10
                   Total count time:       600
          Shift register singles sum:     62755
Shift register reals + accidentals sum:    1008
       Shift register accidentals sum:      426
        Shift register 1st scaler sum:        0
        Shift register 2nd scaler sum:        0
```

Summed multiplicity distributions

```
        R+A sums       A sums
```

Messages

Normalization test -- data quality is inadequate

Results

```
                    Singles:    102.450  +-      0.393
                    Doubles:      0.970  +-      0.055
                    Triples:      0.000  +-      0.000
```



```
                    Scaler 1:      0.000  +-      0.000
                    Scaler 2:      0.000  +-      0.000
```

Normalization results for reference source: H4-694

```
        Current normalization constant:      1.000  +-      0.000
           Cf252 expected singles rate:    101.581  +-      0.227
           Cf252 measured singles rate:    102.450  +-      0.393
        Singles rate expected/measured:      0.992  +-      0.040
            New normalization constant:      1.000  +-      0.000
                Normalization test  --  data quality is inadequate.
```

Cycle raw data

Count time (sec): 60.000

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	6307	104	51	0	0	Pass
2	6196	110	50	0	0	Pass
3	6193	114	43	0	0	Pass
4	6284	104	43	0	0	Pass
5	6314	92	40	0	0	Pass
6	6267	81	35	0	0	Pass
7	6349	107	27	0	0	Pass
8	6188	101	45	0	0	Pass
9	6243	88	35	0	0	Pass
10	6414	107	57	0	0	Pass

Cycle DTC rate data

Cycle	Singles	Doubles	Triples	QC Tests
1	102.975	0.883	0.000	Pass
2	101.125	1.000	0.000	Pass
3	101.075	1.183	0.000	Pass
4	102.592	1.017	0.000	Pass
5	103.092	0.867	0.000	Pass
6	102.308	0.767	0.000	Pass
7	103.675	1.333	0.000	Pass
8	100.992	0.933	0.000	Pass
9	101.908	0.883	0.000	Pass
10	104.758	0.833	0.000	Pass

INCC 5.1.2

```
                Facility:  JMOX
   Material balance area:  JM2G
           Detector type:  AFAS
             Detector id:  JSR_03
         Electronics id:  JSR-12
  Inventory change code:
               I/O code:
       Measurement date:  24.10.11  11:33:26
      Results file name:  4ABL3326.VER
      Inspection number:
                Item id:  PWR COLLAR
             Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
     Measurement option:  Verification
            Data source:  Review disk file
              QC tests:  On
      Error calculation:  Sample method
     Accidentals method:  Measured
         Inspector name:
        Passive comment:

           Isotopics id:  Default
  Isotopics source code:  OD
                 Pu238:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu239:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                 Pu241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu242:    0.0000 +-   0.0000      0.0000 +-   0.0000
               Pu date:  00.01.01              24.10.11
                 Am241:    0.0000 +-   0.0000      0.0000 +-   0.0000
               Am date:  00.01.01              24.10.11

               Predelay:      1.50
            Gate length:     64.00
        2nd gate length:     64.00
           High voltage:   1720
          Die away time:     50.0000
             Efficiency:      0.1620
  Multiplicity deadtime:     86.5000
 Coefficient A deadtime:      0.3458
 Coefficient B deadtime:      0.0299
 Coefficient C deadtime:      0.0000
  Doubles gate fraction:      0.0001
  Triples gate fraction:      0.0001

 Normalization constant:      1.0000 +-    0.0000

 Passive singles bkgrnd:      0.000 +-     0.000
 Passive doubles bkgrnd:      0.000 +-     0.000
 Passive triples bkgrnd:      0.000 +-     0.000
 Passive scaler1 bkgrnd:      0.000
 Passive scaler2 bkgrnd:      0.000

  Number passive cycles:         10
        Count time (sec):        60
```

Passive error messages

No passive calibration curve calibration
No known alpha calibration

Results

```
                    Singles:     1799.173 +-     1.729
                    Doubles:      306.244 +-     1.448
                    Triples:        0.000 +-     0.000
                   Scaler 1:       16.062 +-     0.173
                   Scaler 2:        0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	108327	30970	12349	974	0	Pass
2	108056	30765	12500	968	0	Pass
3	107622	30618	12514	961	0	Pass
4	107459	30514	12085	1013	0	Pass
5	107768	30624	12370	928	0	Pass
6	108283	30867	12395	942	0	Pass
7	107518	30531	12387	968	0	Pass
8	107886	31162	12324	982	0	Pass
9	108212	30597	12668	999	0	Pass
10	108205	31022	12446	902	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	1805.732	310.544	0.000	0.000	Pass
2	1801.214	304.606	0.000	0.000	Pass
3	1793.978	301.921	0.000	0.000	Pass
4	1791.261	307.340	0.000	0.000	Pass
5	1796.412	304.422	0.000	0.000	Pass
6	1804.998	308.059	0.000	0.000	Pass
7	1792.244	302.587	0.000	0.000	Pass
8	1798.380	314.162	0.000	0.000	Pass
9	1803.815	299.003	0.000	0.000	Pass
10	1803.698	309.793	0.000	0.000	Pass

INCC 6.23.2.9 HM32 Not Validated

```
                  Facility: PPFF
      Material balance area: XXXX
              Detector type: PASS
                Detector id: AFAS-P COLLAR
             Electronics id: UDL-1
           Measurement date: 24.10.11     12:01:08
          Results file name: 4ABM0108.NOR
          Inspection number:
         Measurement option: Normalization
                Data source: IAEA DataZ file
     Detector configuration: Passive
                  QC tests: On
       Accidentals method: Measured
           Inspector name:
                  Comment:
           Ending comment: xx


                  Predelay:      1.500
              Gate length:     64.000
             High voltage:       1720
            Die away time:    50.0000
               Efficiency:     0.1620
     Multiplicity deadtime:    86.5000
    Coefficient A deadtime:     0.3458
    Coefficient B deadtime:     0.0299
   *Coefficient C deadtime:     0.0000
     Doubles gate fraction:     0.0001
     Triples gate fraction:     0.0001

    Passive singles bkgrnd:     14.530  +-      0.115
    Passive doubles bkgrnd:      0.002  +-      0.005
    Passive triples bkgrnd:      0.000  +-      0.000
    Passive scaler1 bkgrnd:      0.000
    Passive scaler2 bkgrnd:      0.000
          Number of cycles:         10
          Count time (sec):     60.000
```

Summed raw data

```
                Number of good cycles:         10
                    Total count time:        600
           Shift register singles sum:    1081445
Shift register reals + accidentals sum:    309283
       Shift register accidentals sum:    124549
        Shift register 1st scaler sum:         0
        Shift register 2nd scaler sum:         0
```

Summed multiplicity distributions

```
         R+A sums       A sums
```

Results

```
                    Singles:   1788.159  +-      2.180
                    Doubles:    308.080  +-      0.873
                    Triples:      0.000  +-      0.000
                   Scaler 1:      0.000  +-      0.000
                   Scaler 2:      0.000  +-      0.000
```


Normalization results for reference source: H4-694

```
        Current normalization constant:      1.000  +-      0.000
           Cf252 expected doubles rate:    301.126  +-      0.457
           Cf252 measured doubles rate:    308.080  +-      0.873
        Doubles rate expected/measured:      0.977  +-      0.003
            New normalization constant:      1.000  +-      0.000
                Normalization test  --  data quality is good.
```

Cycle raw data

Count time (sec): 60.000

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	107989	30891	12582	0	0	Pass
2	108307	30916	12382	0	0	Pass
3	107275	30461	12179	0	0	Pass
4	107881	31070	12511	0	0	Pass
5	108576	30973	12682	0	0	Pass
6	108379	31088	12531	0	0	Pass
7	108000	30790	12206	0	0	Pass
8	108137	30891	12604	0	0	Pass
9	108774	31169	12430	0	0	Pass
10	108127	31034	12442	0	0	Pass

Cycle DTC rate data

Cycle	Singles	Doubles	Triples	QC Tests
1	1785.567	305.338	0.000	Pass
2	1790.868	309.091	0.000	Pass
3	1773.663	304.887	0.000	Pass
4	1783.766	309.507	0.000	Pass
5	1795.353	305.039	0.000	Pass
6	1792.069	309.475	0.000	Pass
7	1785.750	309.925	0.000	Pass
8	1788.034	304.972	0.000	Pass
9	1798.654	312.511	0.000	Pass
10	1787.867	310.058	0.000	Pass

INCC 5.1.2

```
                 Facility:  JMOX
   Material balance area:  JM2G
           Detector type:  AFAS
             Detector id:  JSR_03
          Electronics id:  JSR-12
  Inventory change code:
                 I/O code:
       Measurement date:  24.10.11  14:25:19
      Results file name:  4ABO2519.VER
      Inspection number:
                 Item id:  PWR BF
               Stratum id:  XXXX
           Material type:  Pu
 Original declared mass:  0.000
     Measurement option:  Verification
            Data source:  Review disk file
                QC tests:  On
      Error calculation:  Sample method
     Accidentals method:  Measured
         Inspector name:
        Passive comment:

            Isotopics id:  Default
  Isotopics source code:  OD
                  Pu238:    0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu239:    0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                  Pu241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu242:    0.0000 +-   0.0000      0.0000 +-   0.0000
                Pu date:  00.01.01                24.10.11
                  Am241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                Am date:  00.01.01                24.10.11

               Predelay:      1.50
           Gate length:     64.00
       2nd gate length:     64.00
          High voltage:   1720
         Die away time:     50.0000
            Efficiency:      0.0127
  Multiplicity deadtime:      0.0000
 Coefficient A deadtime:      0.0000
 Coefficient B deadtime:      0.0000
 Coefficient C deadtime:      0.0000
  Doubles gate fraction:      0.0001
  Triples gate fraction:      0.0001

 Normalization constant:      1.0000 +-    0.0000

 Passive singles bkgrnd:      0.000 +-     0.000
 Passive doubles bkgrnd:      0.000 +-     0.000
 Passive triples bkgrnd:      0.000 +-     0.000
 Passive scaler1 bkgrnd:      0.000
 Passive scaler2 bkgrnd:      0.000

  Number passive cycles:         10
        Count time (sec):         60
```

Passive error messages

No passive calibration curve calibration
No known alpha calibration

Results

```
                    Singles:       157.347 +-     0.447
                    Doubles:         1.903 +-     0.077
                    Triples:         0.000 +-     0.000
                   Scaler 1:       111.408 +-     0.545
                   Scaler 2:         0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	9366	216	102	6616	0	Pass
2	9323	204	96	6679	0	Pass
3	9526	229	117	6626	0	Pass
4	9378	217	120	6506	0	Pass
5	9415	190	79	6834	0	Pass
6	9503	219	101	6812	0	Pass
7	9379	225	117	6775	0	Pass
8	9528	236	87	6737	0	Pass
9	9417	202	102	6609	0	Pass
10	9573	215	90	6651	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	156.100	1.900	0.000	0.000	Pass
2	155.383	1.800	0.000	0.000	Pass
3	158.767	1.867	0.000	0.000	Pass
4	156.300	1.617	0.000	0.000	Pass
5	156.917	1.850	0.000	0.000	Pass
6	158.383	1.967	0.000	0.000	Pass
7	156.317	1.800	0.000	0.000	Pass
8	158.800	2.483	0.000	0.000	Pass
9	156.950	1.667	0.000	0.000	Pass
10	159.550	2.083	0.000	0.000	Pass

INCC 6.23.2.9 HM32 Not Validated

```
                  Facility: PPFF
      Material balance area: XXXX
             Detector type: UDL-1
               Detector id: AFAS-P BOTTOM
            Electronics id: PASS
          Measurement date: 24.10.11     14:45:46
         Results file name: 4AB04546.NOR
          Inspection number:
        Measurement option: Normalization
               Data source: IAEA DataZ file
     Detector configuration: Passive
                 QC tests: On
       Accidentals method: Measured
           Inspector name:
                  Comment:
           Ending comment: xx


                 Predelay:      1.500
             Gate length:     64.000
            High voltage:       1720
            Die away time:    50.0000
               Efficiency:     0.0127
     Multiplicity deadtime:     0.0000
    Coefficient A deadtime:     0.0000
    Coefficient B deadtime:     0.0000
   *Coefficient C deadtime:     0.0000
     Doubles gate fraction:     0.0001
     Triples gate fraction:     0.0001

    Passive singles bkgrnd:      1.657  +-      0.047
    Passive doubles bkgrnd:      0.000  +-      0.000
    Passive triples bkgrnd:      0.000  +-      0.000
    Passive scaler1 bkgrnd:      0.000
    Passive scaler2 bkgrnd:      0.000
          Number of cycles:         10
          Count time (sec):     60.000
```

Summed raw data

```
                Number of good cycles:         10
                    Total count time:        600
           Shift register singles sum:      67000
Shift register reals + accidentals sum:       1185
       Shift register accidentals sum:        495
        Shift register 1st scaler sum:          0
        Shift register 2nd scaler sum:          0
```

Summed multiplicity distributions

```
         R+A sums       A sums
```

Messages

Normalization test -- data quality is inadequate

Results

```
                    Singles:    110.010  +-      0.585
                    Doubles:      1.150  +-      0.078
                    Triples:      0.000  +-      0.000
```



```
                    Scaler 1:      0.000  +-      0.000
                    Scaler 2:      0.000  +-      0.000
```

Normalization results for reference source: H4-694

```
          Current normalization constant:      1.000  +-      0.000
             Cf252 expected singles rate:    108.858  +-      0.179
             Cf252 measured singles rate:    110.010  +-      0.585
          Singles rate expected/measured:      0.990  +-      0.040
              New normalization constant:      1.000  +-      0.000
                  Normalization test  --  data quality is inadequate.
```

Cycle raw data

Count time (sec): 60.000

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	6840	126	59	0	0	Pass
2	6625	122	49	0	0	Pass
3	6679	112	49	0	0	Pass
4	6611	121	60	0	0	Pass
5	6695	111	40	0	0	Pass
6	6605	122	41	0	0	Pass
7	6521	107	25	0	0	Pass
8	6825	97	64	0	0	Pass
9	6806	130	55	0	0	Pass
10	6793	137	53	0	0	Pass

Cycle DTC rate data

Cycle	Singles	Doubles	Triples	QC Tests
1	112.343	1.117	0.000	Pass
2	108.760	1.217	0.000	Pass
3	109.660	1.050	0.000	Pass
4	108.527	1.017	0.000	Pass
5	109.927	1.183	0.000	Pass
6	108.427	1.350	0.000	Pass
7	107.027	1.367	0.000	Pass
8	112.093	0.550	0.000	Pass
9	111.777	1.250	0.000	Pass
10	111.560	1.400	0.000	Pass

INCC 5.1.2

```
               Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_01
         Electronics id:  JSR-12
  Inventory change code:
                 I/O code:
       Measurement date:  24.11.05  11:53:12
      Results file name:  4B5L5312.VER
      Inspection number:
                Item id:  BWR TF
             Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
     Measurement option:  Verification
            Data source:  Review disk file
              QC tests:  On
      Error calculation:  Sample method
     Accidentals method:  Measured
         Inspector name:
        Passive comment:

           Isotopics id:  Default
  Isotopics source code:  OD
                  Pu238:    0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu239:    0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                  Pu241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu242:    0.0000 +-   0.0000      0.0000 +-   0.0000
                Pu date:  00.01.01                24.11.05
                  Am241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                Am date:  00.01.01                24.11.05

               Predelay:      1.50
            Gate length:     64.00
        2nd gate length:     64.00
           High voltage:   1720
           Die away time:     50.0000
              Efficiency:      0.1970
  Multiplicity deadtime:    160.0000
 Coefficient A deadtime:      0.6419
 Coefficient B deadtime:      0.1030
 Coefficient C deadtime:      0.0000
  Doubles gate fraction:      0.0001
  Triples gate fraction:      0.0001

 Normalization constant:      1.0000 +-    0.0000
 Passive singles bkgrnd:      0.000 +-     0.000
 Passive doubles bkgrnd:      0.000 +-     0.000
 Passive triples bkgrnd:      0.000 +-     0.000
 Passive scaler1 bkgrnd:      0.000
 Passive scaler2 bkgrnd:      0.000

  Number passive cycles:         10
       Count time (sec):         60
```

Passive error messages

Known alpha analysis error

Passive results


```
                  Singles:       66.452 +-      0.248
                  Doubles:        0.328 +-      0.044
                  Triples:        0.000 +-      0.000
                 Scaler 1:      114.907 +-      0.364
                 Scaler 2:        0.000 +-      0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	3975	44	13	6984	0	Pass
2	3992	30	18	6885	0	Pass
3	3958	33	18	6960	0	Pass
4	4049	40	17	6857	0	Pass
5	4017	34	15	6980	0	Pass
6	3962	38	19	6818	0	Pass
7	4006	33	20	6832	0	Pass
8	4017	47	10	6927	0	Pass
9	4015	33	18	6910	0	Pass
10	3880	30	17	6791	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	66.251	0.517	0.000	0.000	Pass
2	66.534	0.200	0.000	0.000	Pass
3	65.967	0.250	0.000	0.000	Pass
4	67.484	0.383	0.000	0.000	Pass
5	66.951	0.317	0.000	0.000	Pass
6	66.034	0.317	0.000	0.000	Pass
7	66.767	0.217	0.000	0.000	Pass
8	66.951	0.617	0.000	0.000	Pass
9	66.917	0.250	0.000	0.000	Pass
10	64.667	0.217	0.000	0.000	Pass

INCC 5.1.2

Facility:	JMOX
Material balance area:	JM2G
Detector type:	AFAS
Detector id:	JSR_01
Electronics id:	JSR-12
Inventory change code:	
I/O code:	
Measurement date:	24.11.05 10:25:48
Results file name:	4B5K2548.VER
Inspection number:	
Item id:	BWR COLLAR
Stratum id:	XXXX
Material type:	Pu
Original declared mass:	0.000
Measurement option:	Verification
Data source:	Review disk file
QC tests:	On
Error calculation:	Sample method
Accidentals method:	Measured
Inspector name:	
Passive comment:	
Isotopics id:	Default
Isotopics source code:	OD
Pu238:	0.0000 +- 0.0000 0.0000 +- 0.0000
Pu239:	0.0000 +- 0.0000 0.0000 +- 0.0000
Pu240:	100.0000 +- 0.0000 100.0000 +- 0.0000
Pu241:	0.0000 +- 0.0000 0.0000 +- 0.0000
Pu242:	0.0000 +- 0.0000 0.0000 +- 0.0000
Pu date:	00.01.01 24.11.05
Am241:	0.0000 +- 0.0000 0.0000 +- 0.0000
Am date:	00.01.01 24.11.05
Predelay:	1.50
Gate length:	64.00
2nd gate length:	64.00
High voltage:	1720
Die away time:	50.0000
Efficiency:	0.1970
Multiplicity deadtime:	160.0000
Coefficient A deadtime:	0.6419
Coefficient B deadtime:	0.1030
Coefficient C deadtime:	0.0000
Doubles gate fraction:	0.0001
Triples gate fraction:	0.0001
Normalization constant:	1.0000 +- 0.0000
Passive singles bkgrnd:	0.000 +- 0.000
Passive doubles bkgrnd:	0.000 +- 0.000
Passive triples bkgrnd:	0.000 +- 0.000
Passive scaler1 bkgrnd:	0.000
Passive scaler2 bkgrnd:	0.000
Number passive cycles:	10
Count time (sec):	60

Passive error messages

Known alpha analysis error

Passive results

Singles:	2157.132 +- 0.936
Doubles:	461.512 +- 1.721
Triples:	0.000 +- 0.000
Scaler 1:	7.917 +- 0.136
Scaler 2:	0.000 +- 0.000

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	129560	45735	17847	507	0	Pass
2	129269	45263	17860	418	0	Pass
3	129545	45800	17912	501	0	Pass
4	129490	45811	17593	472	0	Pass
5	129539	45453	17717	486	0	Pass
6	129351	45439	17983	449	0	Pass
7	129195	45470	17649	481	0	Pass
8	129247	45318	17638	488	0	Pass
9	129556	45207	17919	473	0	Pass
10	129079	45009	17863	475	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	2160.082	465.445	0.000	0.000	Pass
2	2155.229	457.349	0.000	0.000	Pass
3	2159.832	465.445	0.000	0.000	Pass
4	2158.914	470.952	0.000	0.000	Pass
5	2159.732	462.908	0.000	0.000	Pass
6	2156.596	458.234	0.000	0.000	Pass
7	2153.994	464.325	0.000	0.000	Pass
8	2154.862	461.972	0.000	0.000	Pass
9	2160.015	455.431	0.000	0.000	Pass
10	2152.060	453.059	0.000	0.000	Pass

INCC 5.1.2

Facility:	JMOX
Material balance area:	JM2G
Detector type:	AFAS
Detector id:	JSR_02
Electronics id:	JSR-12
Inventory change code:	
I/O code:	
Measurement date:	24.11.05 10:38:48
Results file name:	4B5K3848.VER
Inspection number:	
Item id:	BWR BF
Stratum id:	XXXX
Material type:	Pu
Original declared mass:	0.000
Measurement option:	Verification
Data source:	Review disk file
QC tests:	On
Error calculation:	Sample method
Accidentals method:	Measured
Inspector name:	
Passive comment:	
Isotopics id:	Default
Isotopics source code:	OD
Pu238:	0.0000 +- 0.0000 0.0000 +- 0.0000
Pu239:	0.0000 +- 0.0000 0.0000 +- 0.0000
Pu240:	100.0000 +- 0.0000 100.0000 +- 0.0000
Pu241:	0.0000 +- 0.0000 0.0000 +- 0.0000
Pu242:	0.0000 +- 0.0000 0.0000 +- 0.0000
Pu date:	00.01.01 24.11.05
Am241:	0.0000 +- 0.0000 0.0000 +- 0.0000
Am date:	00.01.01 24.11.05
Predelay:	1.50
Gate length:	64.00
2nd gate length:	64.00
High voltage:	1720
Die away time:	50.0000
Efficiency:	0.0060
Multiplicity deadtime:	0.0000
Coefficient A deadtime:	0.0000
Coefficient B deadtime:	0.0000
Coefficient C deadtime:	0.0000
Doubles gate fraction:	0.0001
Triples gate fraction:	0.0001
Normalization constant:	1.0000 +- 0.0000
Passive singles bkgrnd:	0.000 +- 0.000
Passive doubles bkgrnd:	0.000 +- 0.000
Passive triples bkgrnd:	0.000 +- 0.000
Passive scaler1 bkgrnd:	0.000
Passive scaler2 bkgrnd:	0.000
Number passive cycles:	10
Count time (sec):	60

Passive error messages

No known alpha calibration

Results

Singles:	116.957 +- 0.386
Doubles:	1.215 +- 0.099
Triples:	0.000 +- 0.000
Scaler 1:	3.845 +- 0.065
Scaler 2:	0.000 +- 0.000

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	7094	94	55	234	0	Pass
2	6997	134	43	235	0	Pass
3	6862	118	46	256	0	Pass
4	7033	125	63	229	0	Pass
5	6980	108	48	219	0	Pass
6	6978	130	48	236	0	Pass
7	7136	140	57	213	0	Pass
8	7029	149	47	240	0	Pass
9	7030	117	61	221	0	Pass
10	7035	131	49	224	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	118.233	0.650	0.000	0.000	Pass
2	116.617	1.517	0.000	0.000	Pass
3	114.367	1.200	0.000	0.000	Pass
4	117.217	1.033	0.000	0.000	Pass
5	116.333	1.000	0.000	0.000	Pass
6	116.300	1.367	0.000	0.000	Pass
7	118.933	1.383	0.000	0.000	Pass
8	117.150	1.700	0.000	0.000	Pass
9	117.167	0.933	0.000	0.000	Pass
10	117.250	1.367	0.000	0.000	Pass

INCC 5.1.2

```
              Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_02
        Electronics id:  JSR-12
  Inventory change code:
              I/O code:
      Measurement date:  24.11.05  10:55:52
     Results file name:  4B5K5552.VER
     Inspection number:
               Item id:  PWR TF
            Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
    Measurement option:  Verification
           Data source:  Review disk file
              QC tests:  On
     Error calculation:  Sample method
    Accidentals method:  Measured
        Inspector name:
       Passive comment:

          Isotopics id:  Default
  Isotopics source code:  OD
                 Pu238:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu239:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                 Pu241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu242:    0.0000 +-   0.0000      0.0000 +-   0.0000
               Pu date:  00.01.01                24.11.05
                 Am241:    0.0000 +-   0.0000      0.0000 +-   0.0000
               Am date:  00.01.01                24.11.05

              Predelay:      1.50
           Gate length:     64.00
       2nd gate length:     64.00
          High voltage:   1720
         Die away time:     50.0000
            Efficiency:      0.0060
  Multiplicity deadtime:     0.0000
 Coefficient A deadtime:     0.0000
 Coefficient B deadtime:     0.0000
 Coefficient C deadtime:     0.0000
  Doubles gate fraction:     0.0001
  Triples gate fraction:     0.0001

 Normalization constant:     1.0000 +-    0.0000

 Passive singles bkgrnd:     0.000 +-     0.000
 Passive doubles bkgrnd:     0.000 +-     0.000
 Passive triples bkgrnd:     0.000 +-     0.000
 Passive scaler1 bkgrnd:     0.000
 Passive scaler2 bkgrnd:     0.000

  Number passive cycles:        10
       Count time (sec):        60

Passive error messages

No known alpha calibration
```


Results

```
                 Singles:        2.267 +-     0.066
                 Doubles:        0.002 +-     0.002
                 Triples:        0.000 +-     0.000
                Scaler 1:      102.442 +-     0.426
                Scaler 2:        0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	120	1	0	6331	0	Pass
2	118	0	0	6157	0	Pass
3	131	0	0	6197	0	Pass
4	152	0	0	6119	0	Pass
5	151	0	0	6113	0	Pass
6	132	0	0	6080	0	Pass
7	149	0	0	6158	0	Pass
8	143	0	0	6158	0	Pass
9	127	0	0	6023	0	Pass
10	137	0	0	6129	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	2.000	0.017	0.000	0.000	Pass
2	1.967	0.000	0.000	0.000	Pass
3	2.183	0.000	0.000	0.000	Pass
4	2.533	0.000	0.000	0.000	Pass
5	2.517	0.000	0.000	0.000	Pass
6	2.200	0.000	0.000	0.000	Pass
7	2.483	0.000	0.000	0.000	Pass
8	2.383	0.000	0.000	0.000	Pass
9	2.117	0.000	0.000	0.000	Pass
10	2.283	0.000	0.000	0.000	Pass

INCC 6.23.2.9 HM32 Not Validated

```
                 Facility: PPFF
   Material balance area: XXXX
           Detector type: PASS
             Detector id: AFAS-P TOP
         Electronics id: UDL-1
      Measurement date: 24.11.05     11:19:28
     Results file name: 4B5L1928.NOR
      Inspection number:
     Measurement option: Normalization
            Data source: IAEA DataZ file
  Detector configuration: Passive
               QC tests: On
     Accidentals method: Measured
         Inspector name:
                Comment:
         Ending comment: xx


              Predelay:      1.500
           Gate length:     64.000
          High voltage:       1720
         Die away time:     50.0000
            Efficiency:      0.0126
  Multiplicity deadtime:     0.0000
 Coefficient A deadtime:     0.0000
 Coefficient B deadtime:     0.0000
*Coefficient C deadtime:     0.0000
  Doubles gate fraction:     0.0001
  Triples gate fraction:     0.0001

 Passive singles bkgrnd:      1.908  +-      0.052
 Passive doubles bkgrnd:      0.000  +-      0.000
 Passive triples bkgrnd:      0.000  +-      0.000
 Passive scaler1 bkgrnd:      0.000
 Passive scaler2 bkgrnd:      0.000
       Number of cycles:         10
       Count time (sec):     60.000
```

Summed raw data

```
          Number of good cycles:        10
                Total count time:       600
       Shift register singles sum:    61567
Shift register reals + accidentals sum:  1036
   Shift register accidentals sum:      403
    Shift register 1st scaler sum:        0
    Shift register 2nd scaler sum:        0
```

Summed multiplicity distributions

```
      R+A sums       A sums
```

Messages

Normalization test -- data quality is inadequate

Results

```
                 Singles:    100.703  +-      0.316
                 Doubles:      1.055  +-      0.074
                 Triples:      0.000  +-      0.000
```



```
                Scaler 1:      0.000  +-      0.000
                Scaler 2:      0.000  +-      0.000
```

Normalization results for reference source: H4-694

```
      Current normalization constant:      1.000  +-      0.000
         Cf252 expected singles rate:     99.776  +-      0.223
         Cf252 measured singles rate:    100.703  +-      0.316
      Singles rate expected/measured:      0.991  +-      0.040
          New normalization constant:      1.000  +-      0.000
              Normalization test  --  data quality is inadequate.
```

Cycle raw data

Count time (sec): 60.000

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	6123	109	40	0	0	Pass
2	6135	109	46	0	0	Pass
3	6304	103	40	0	0	Pass
4	6206	121	32	0	0	Pass
5	6126	97	38	0	0	Pass
6	6096	82	43	0	0	Pass
7	6143	104	41	0	0	Pass
8	6135	108	41	0	0	Pass
9	6162	112	37	0	0	Pass
10	6137	91	45	0	0	Pass

Cycle DTC rate data

Cycle	Singles	Doubles	Triples	QC Tests
1	100.142	1.150	0.000	Pass
2	100.342	1.050	0.000	Pass
3	103.158	1.050	0.000	Pass
4	101.525	1.483	0.000	Pass
5	100.192	0.983	0.000	Pass
6	99.692	0.650	0.000	Pass
7	100.475	1.050	0.000	Pass
8	100.342	1.117	0.000	Pass
9	100.792	1.250	0.000	Pass
10	100.375	0.767	0.000	Pass

INCC 5.1.2

```
              Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_03
         Electronics id:  JSR-12
  Inventory change code:
              I/O code:
      Measurement date:  24.11.05  13:24:33
     Results file name:  4B5N2433.VER
     Inspection number:
               Item id:  PWR COLLAR
            Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
    Measurement option:  Verification
           Data source:  Review disk file
              QC tests:  On
     Error calculation:  Sample method
    Accidentals method:  Measured
        Inspector name:
       Passive comment:

          Isotopics id:  Default
  Isotopics source code:  OD
                 Pu238:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu239:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                 Pu241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu242:    0.0000 +-   0.0000      0.0000 +-   0.0000
               Pu date:  00.01.01                24.11.05
                 Am241:    0.0000 +-   0.0000      0.0000 +-   0.0000
               Am date:  00.01.01                24.11.05

               Predelay:      1.50
            Gate length:     64.00
        2nd gate length:     64.00
          High voltage:   1720
         Die away time:     50.0000
            Efficiency:      0.1620
  Multiplicity deadtime:    86.5000
 Coefficient A deadtime:     0.3458
 Coefficient B deadtime:     0.0299
 Coefficient C deadtime:     0.0000
  Doubles gate fraction:     0.0001
  Triples gate fraction:     0.0001

 Normalization constant:     1.0000 +-    0.0000

 Passive singles bkgrnd:     0.000 +-     0.000
 Passive doubles bkgrnd:     0.000 +-     0.000
 Passive triples bkgrnd:     0.000 +-     0.000
 Passive scaler1 bkgrnd:     0.000
 Passive scaler2 bkgrnd:     0.000

  Number passive cycles:        10
       Count time (sec):        60

Passive error messages

No passive calibration curve calibration
No known alpha calibration
```


Results

```
                 Singles:      1767.602 +-     2.943
                 Doubles:       299.833 +-     1.724
                 Triples:         0.000 +-     0.000
                Scaler 1:        15.393 +-     0.089
                Scaler 2:         0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	107063	30194	11843	911	0	Pass
2	105335	29956	11540	951	0	Pass
3	106471	30200	12124	891	0	Pass
4	106086	29991	12328	924	0	Pass
5	106095	30183	12014	930	0	Pass
6	105606	29456	12085	936	0	Pass
7	106213	29691	11956	925	0	Pass
8	105196	29630	11780	907	0	Pass
9	106398	30355	12174	930	0	Pass
10	105936	30129	12151	931	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	1784.659	306.039	0.000	0.000	Pass
2	1755.850	307.120	0.000	0.000	Pass
3	1774.789	301.452	0.000	0.000	Pass
4	1768.370	294.563	0.000	0.000	Pass
5	1768.520	303.002	0.000	0.000	Pass
6	1760.368	289.693	0.000	0.000	Pass
7	1770.488	295.764	0.000	0.000	Pass
8	1753.532	297.680	0.000	0.000	Pass
9	1773.572	303.203	0.000	0.000	Pass
10	1765.870	299.816	0.000	0.000	Pass

INCC 6.23.2.9 HM32 Not Validated

```
                 Facility: PPFF
   Material balance area: XXXX
           Detector type: PASS
             Detector id: AFAS-P COLLAR
          Electronics id: UDL-1
       Measurement date: 24.11.05     13:48:53
      Results file name: 4B5N4853.NOR
       Inspection number:
      Measurement option: Normalization
             Data source: IAEA DataZ file
  Detector configuration: Passive
               QC tests: On
     Accidentals method: Measured
         Inspector name:
                Comment:
          Ending comment: xx


               Predelay:      1.500
            Gate length:     64.000
           High voltage:       1720
          Die away time:    50.0000
              Efficiency:     0.1620
   Multiplicity deadtime:    86.5000
  Coefficient A deadtime:     0.3458
  Coefficient B deadtime:     0.0299
 *Coefficient C deadtime:     0.0000
   Doubles gate fraction:     0.0001
   Triples gate fraction:     0.0001

  Passive singles bkgrnd:    12.348  +-      0.244
  Passive doubles bkgrnd:     0.000  +-      0.000
  Passive triples bkgrnd:     0.000  +-      0.000
  Passive scaler1 bkgrnd:     0.000
  Passive scaler2 bkgrnd:     0.000
        Number of cycles:        10
        Count time (sec):    60.000
```

Summed raw data

```
             Number of good cycles:        10
                     Total count time:       600
         Shift register singles sum:   1060148
Shift register reals + accidentals sum:    299975
      Shift register accidentals sum:    119227
       Shift register 1st scaler sum:         0
       Shift register 2nd scaler sum:         0
```

Summed multiplicity distributions

R+A sums A sums

Messages

Normalization test -- data quality is inadequate

Results

```
                 Singles:   1754.835  +-      1.652
                 Doubles:    301.431  +-      1.250
                 Triples:      0.000  +-      0.000
```



```
                Scaler 1:      0.000  +-      0.000
                Scaler 2:      0.000  +-      0.000
```

Normalization results for reference source: H4-694

```
         Current normalization constant:      1.000  +-      0.000
            Cf252 expected doubles rate:    295.756  +-      0.449
            Cf252 measured doubles rate:    301.431  +-      1.250
         Doubles rate expected/measured:      0.981  +-      0.004
             New normalization constant:      1.000  +-      0.000
                 Normalization test  --  data quality is inadequate.
             Measured percent precision:      0.415
             Required percent precision:      0.300
        Repeat measurement for at least:      0.000
```

Cycle raw data

Count time (sec): 60.000

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	106107	30282	11744	0	0	Pass
2	106288	29915	11977	0	0	Pass
3	106243	30192	11915	0	0	Pass
4	106031	30029	12202	0	0	Pass
5	106396	30352	12168	0	0	Pass
6	105956	30098	11852	0	0	Pass
7	105418	29635	11591	0	0	Pass
8	106148	29740	11966	0	0	Pass
9	106000	29975	12089	0	0	Pass
10	105561	29757	11723	0	0	Pass

Cycle DTC rate data

Cycle	Singles	Doubles	Triples	QC Tests
1	1756.372	309.156	0.000	Pass
2	1759.390	299.150	0.000	Pass
3	1758.639	304.803	0.000	Pass
4	1755.105	297.298	0.000	Pass
5	1761.190	303.253	0.000	Pass
6	1753.855	304.286	0.000	Pass
7	1744.885	300.916	0.000	Pass
8	1757.056	296.415	0.000	Pass
9	1754.588	298.282	0.000	Pass
10	1747.269	300.750	0.000	Pass

INCC 5.1.2

```
               Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_03
         Electronics id:  JSR-12
  Inventory change code:
              I/O code:
      Measurement date:  24.11.05  11:32:03
     Results file name:  4B5L3203.VER
     Inspection number:
               Item id:  PWR BF
           Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
    Measurement option:  Verification
           Data source:  Review disk file
              QC tests:  On
     Error calculation:  Sample method
    Accidentals method:  Measured
        Inspector name:
       Passive comment:

          Isotopics id:  Default
  Isotopics source code:  OD
                 Pu238:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu239:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                 Pu241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu242:    0.0000 +-   0.0000      0.0000 +-   0.0000
               Pu date:  00.01.01                24.11.05
                 Am241:    0.0000 +-   0.0000      0.0000 +-   0.0000
               Am date:  00.01.01                24.11.05

              Predelay:      1.50
           Gate length:     64.00
       2nd gate length:     64.00
          High voltage:   1720
        Die away time:     50.0000
            Efficiency:      0.0127
 Multiplicity deadtime:      0.0000
Coefficient A deadtime:      0.0000
Coefficient B deadtime:      0.0000
Coefficient C deadtime:      0.0000
 Doubles gate fraction:      0.0001
 Triples gate fraction:      0.0001

Normalization constant:      1.0000 +-    0.0000

Passive singles bkgrnd:      0.000 +-     0.000
Passive doubles bkgrnd:      0.000 +-     0.000
Passive triples bkgrnd:      0.000 +-     0.000
Passive scaler1 bkgrnd:      0.000
Passive scaler2 bkgrnd:      0.000

 Number passive cycles:         10
      Count time (sec):         60
```

Passive error messages

No passive calibration curve calibration
No known alpha calibration

Results

```
                 Singles:       152.360 +-     0.338
                 Doubles:         1.967 +-     0.093
                 Triples:         0.000 +-     0.000
                Scaler 1:       109.275 +-     0.376
                Scaler 2:         0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	9166	208	90	6667	0	Pass
2	9190	203	95	6477	0	Pass
3	9207	192	111	6553	0	Pass
4	9190	206	97	6473	0	Pass
5	9106	214	88	6674	0	Pass
6	9164	199	88	6523	0	Pass
7	9141	234	102	6591	0	Pass
8	8982	214	80	6579	0	Pass
9	9140	234	90	6508	0	Pass
10	9130	206	89	6520	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	152.767	1.967	0.000	0.000	Pass
2	153.167	1.800	0.000	0.000	Pass
3	153.450	1.350	0.000	0.000	Pass
4	153.167	1.817	0.000	0.000	Pass
5	151.767	2.100	0.000	0.000	Pass
6	152.733	1.850	0.000	0.000	Pass
7	152.350	2.200	0.000	0.000	Pass
8	149.700	2.233	0.000	0.000	Pass
9	152.333	2.400	0.000	0.000	Pass
10	152.167	1.950	0.000	0.000	Pass

INCC 6.23.2.9 HM32 Not Validated

```
                 Facility: PPFF
     Material balance area: XXXX
             Detector type: UDL-1
               Detector id: AFAS-P BOTTOM
            Electronics id: PASS
        Measurement date: 24.11.05     11:59:27
        Results file name: 4B5L5927.NOR
         Inspection number:
       Measurement option: Normalization
              Data source: IAEA DataZ file
   Detector configuration: Passive
                 QC tests: On
       Accidentals method: Measured
           Inspector name:
                  Comment:
           Ending comment: xx


                 Predelay:      1.500
              Gate length:     64.000
             High voltage:       1720
            Die away time:    50.0000
                Efficiency:     0.0127
     Multiplicity deadtime:     0.0000
    Coefficient A deadtime:     0.0000
    Coefficient B deadtime:     0.0000
   *Coefficient C deadtime:     0.0000
     Doubles gate fraction:     0.0001
     Triples gate fraction:     0.0001

    Passive singles bkgrnd:      1.312  +-      0.029
    Passive doubles bkgrnd:      0.000  +-      0.000
    Passive triples bkgrnd:      0.000  +-      0.000
    Passive scaler1 bkgrnd:      0.000
    Passive scaler2 bkgrnd:      0.000
          Number of cycles:         10
          Count time (sec):     60.000
```

Summed raw data

```
                Number of good cycles:         10
                     Total count time:        600
           Shift register singles sum:      65536
Shift register reals + accidentals sum:       1103
        Shift register accidentals sum:        472
         Shift register 1st scaler sum:          0
         Shift register 2nd scaler sum:          0
```

Summed multiplicity distributions

R+A sums A sums

Results

```
                 Singles:    107.915  +-      0.215
                 Doubles:      1.052  +-      0.042
                 Triples:      0.000  +-      0.000
                Scaler 1:      0.000  +-      0.000
                Scaler 2:      0.000  +-      0.000
```


Normalization results for reference source: H4-694

```
        Current normalization constant:      1.000  +-      0.000
           Cf252 expected singles rate:    106.932  +-      0.176
           Cf252 measured singles rate:    107.915  +-      0.215
        Singles rate expected/measured:      0.991  +-      0.040
            New normalization constant:      1.000  +-      0.000
                Normalization test  --  data quality is good.
```

Cycle raw data

Count time (sec): 60.000

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	6506	98	46	0	0	Pass
2	6541	104	43	0	0	Pass
3	6615	127	51	0	0	Pass
4	6593	124	59	0	0	Pass
5	6608	115	56	0	0	Pass
6	6553	111	45	0	0	Pass
7	6494	93	39	0	0	Pass
8	6534	120	47	0	0	Pass
9	6548	112	44	0	0	Pass
10	6544	99	42	0	0	Pass

Cycle DTC rate data

Cycle	Singles	Doubles	Triples	QC Tests
1	107.122	0.867	0.000	Pass
2	107.705	1.017	0.000	Pass
3	108.938	1.267	0.000	Pass
4	108.572	1.083	0.000	Pass
5	108.822	0.983	0.000	Pass
6	107.905	1.100	0.000	Pass
7	106.922	0.900	0.000	Pass
8	107.588	1.217	0.000	Pass
9	107.822	1.133	0.000	Pass
10	107.755	0.950	0.000	Pass

INCC 5.1.2

```
               Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_01
         Electronics id:  JSR-12
  Inventory change code:
              I/O code:
      Measurement date:  24.12.10  10:53:57
     Results file name:  4CAK5357.VER
     Inspection number:
               Item id:  BWR TF
            Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
    Measurement option:  Verification
           Data source:  Review disk file
              QC tests:  On
     Error calculation:  Sample method
    Accidentals method:  Measured
        Inspector name:
       Passive comment:

          Isotopics id:  Default
  Isotopics source code:  OD
                 Pu238:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu239:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                 Pu241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu242:    0.0000 +-   0.0000      0.0000 +-   0.0000
               Pu date:  00.01.01                24.12.10
                 Am241:    0.0000 +-   0.0000      0.0000 +-   0.0000
               Am date:  00.01.01                24.12.10

              Predelay:      1.50
           Gate length:     64.00
       2nd gate length:     64.00
          High voltage:   1720
        Die away time:     50.0000
           Efficiency:      0.0080
 Multiplicity deadtime:     0.0000
Coefficient A deadtime:     0.0000
Coefficient B deadtime:     0.0000
Coefficient C deadtime:     0.0000
 Doubles gate fraction:     0.0001
 Triples gate fraction:     0.0001

Normalization constant:     1.0000 +-    0.0000
Passive singles bkgrnd:     0.000 +-     0.000
Passive doubles bkgrnd:     0.000 +-     0.000
Passive triples bkgrnd:     0.000 +-     0.000
Passive scaler1 bkgrnd:     0.000
Passive scaler2 bkgrnd:     0.000

 Number passive cycles:        10
      Count time (sec):        60
```

Passive error messages

Known alpha analysis error

Passive results


```
                 Singles:      63.988 +-     0.379
                 Doubles:       0.275 +-     0.027
                 Triples:       0.000 +-     0.000
                Scaler 1:     111.127 +-     0.575
                Scaler 2:       0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	3767	29	14	6566	0	Pass
2	3760	38	13	6440	0	Pass
3	3886	25	17	6597	0	Pass
4	3896	33	13	6780	0	Pass
5	3876	30	17	6709	0	Pass
6	3813	32	14	6756	0	Pass
7	3780	30	15	6653	0	Pass
8	3839	36	17	6779	0	Pass
9	3790	35	14	6656	0	Pass
10	3986	28	17	6740	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	62.783	0.250	0.000	0.000	Pass
2	62.667	0.417	0.000	0.000	Pass
3	64.767	0.133	0.000	0.000	Pass
4	64.933	0.333	0.000	0.000	Pass
5	64.600	0.217	0.000	0.000	Pass
6	63.550	0.300	0.000	0.000	Pass
7	63.000	0.250	0.000	0.000	Pass
8	63.983	0.317	0.000	0.000	Pass
9	63.167	0.350	0.000	0.000	Pass
10	66.433	0.183	0.000	0.000	Pass

INCC 5.1.2

```
               Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_01
         Electronics id:  JSR-12
  Inventory change code:
              I/O code:
      Measurement date:  24.12.10  11:11:02
     Results file name:  4CAL1102.VER
     Inspection number:
               Item id:  BWR COLLAR
            Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
    Measurement option:  Verification
           Data source:  Review disk file
              QC tests:  On
     Error calculation:  Sample method
    Accidentals method:  Measured
        Inspector name:
       Passive comment:

          Isotopics id:  Default
  Isotopics source code:  OD
                 Pu238:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu239:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                 Pu241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu242:    0.0000 +-   0.0000      0.0000 +-   0.0000
               Pu date:  00.01.01                24.12.10
                 Am241:    0.0000 +-   0.0000      0.0000 +-   0.0000
               Am date:  00.01.01                24.12.10

              Predelay:      1.50
           Gate length:     64.00
       2nd gate length:     64.00
          High voltage:   1720
        Die away time:     50.0000
           Efficiency:      0.1970
 Multiplicity deadtime:    160.0000
Coefficient A deadtime:     0.6419
Coefficient B deadtime:     0.1030
Coefficient C deadtime:     0.0000
 Doubles gate fraction:     0.0001
 Triples gate fraction:     0.0001

Normalization constant:     1.0000 +-    0.0000
Passive singles bkgrnd:     0.000 +-     0.000
Passive doubles bkgrnd:     0.000 +-     0.000
Passive triples bkgrnd:     0.000 +-     0.000
Passive scaler1 bkgrnd:     0.000
Passive scaler2 bkgrnd:     0.000

 Number passive cycles:        10
      Count time (sec):        60
```

Passive error messages

Known alpha analysis error

Passive results


```
                 Singles:    2108.130 +-     1.666
                 Doubles:     449.059 +-     1.066
                 Triples:       0.000 +-     0.000
                Scaler 1:       7.808 +-     0.185
                Scaler 2:       0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	126573	43868	17213	465	0	Pass
2	126335	43953	16928	496	0	Pass
3	126193	43849	16879	394	0	Pass
4	126618	43944	16840	490	0	Pass
5	126540	43814	17036	438	0	Pass
6	125915	43744	16905	444	0	Pass
7	126381	43554	16958	475	0	Pass
8	126130	44071	17024	499	0	Pass
9	126867	44295	17466	511	0	Pass
10	126898	44506	17278	473	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	2110.265	444.852	0.000	0.000	Pass
2	2106.295	451.026	0.000	0.000	Pass
3	2103.927	450.107	0.000	0.000	Pass
4	2111.015	452.346	0.000	0.000	Pass
5	2109.714	446.905	0.000	0.000	Pass
6	2099.290	447.920	0.000	0.000	Pass
7	2107.062	443.867	0.000	0.000	Pass
8	2102.876	451.392	0.000	0.000	Pass
9	2115.168	447.758	0.000	0.000	Pass
10	2115.685	454.417	0.000	0.000	Pass

INCC 5.1.2

Facility:	JMOX
Material balance area:	JM2G
Detector type:	AFAS
Detector id:	JSR_02
Electronics id:	JSR-12
Inventory change code:	
I/O code:	
Measurement date:	24.12.10 11:27:04
Results file name:	4CAL2704.VER
Inspection number:	
Item id:	BWR BF
Stratum id:	XXXX
Material type:	Pu
Original declared mass:	0.000
Measurement option:	Verification
Data source:	Review disk file
QC tests:	On
Error calculation:	Sample method
Accidentals method:	Measured
Inspector name:	
Passive comment:	

Isotopics id:	Default			
Isotopics source code:	OD			
Pu238:	0.0000 +-	0.0000	0.0000 +-	0.0000
Pu239:	0.0000 +-	0.0000	0.0000 +-	0.0000
Pu240:	100.0000 +-	0.0000	100.0000 +-	0.0000
Pu241:	0.0000 +-	0.0000	0.0000 +-	0.0000
Pu242:	0.0000 +-	0.0000	0.0000 +-	0.0000
Pu date:	00.01.01		24.12.10	
Am241:	0.0000 +-	0.0000	0.0000 +-	0.0000
Am date:	00.01.01		24.12.10	

Predelay:	1.50
Gate length:	64.00
2nd gate length:	64.00
High voltage:	1720
Die away time:	50.0000
Efficiency:	0.0060
Multiplicity deadtime:	0.0000
Coefficient A deadtime:	0.0000
Coefficient B deadtime:	0.0000
Coefficient C deadtime:	0.0000
Doubles gate fraction:	0.0001
Triples gate fraction:	0.0001
Normalization constant:	1.0000 +- 0.0000
Passive singles bkgrnd:	0.000 +- 0.000
Passive doubles bkgrnd:	0.000 +- 0.000
Passive triples bkgrnd:	0.000 +- 0.000
Passive scaler1 bkgrnd:	0.000
Passive scaler2 bkgrnd:	0.000
Number passive cycles:	10
Count time (sec):	60

Passive error messages

No known alpha calibration

Results

Singles:	114.703 +-	0.448
Doubles:	1.195 +-	0.054
Triples:	0.000 +-	0.000
Scaler 1:	3.843 +-	0.115
Scaler 2:	0.000 +-	0.000

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	6930	135	49	219	0	Pass
2	6829	125	61	222	0	Pass
3	6894	135	53	259	0	Pass
4	6936	105	45	254	0	Pass
5	6752	118	50	253	0	Pass
6	6953	117	46	212	0	Pass
7	7021	120	62	232	0	Pass
8	6832	127	45	193	0	Pass
9	6770	133	52	246	0	Pass
10	6905	117	52	216	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	115.500	1.433	0.000	0.000	Pass
2	113.817	1.067	0.000	0.000	Pass
3	114.900	1.367	0.000	0.000	Pass
4	115.600	1.000	0.000	0.000	Pass
5	112.533	1.133	0.000	0.000	Pass
6	115.883	1.183	0.000	0.000	Pass
7	117.017	0.967	0.000	0.000	Pass
8	113.867	1.367	0.000	0.000	Pass
9	112.833	1.350	0.000	0.000	Pass
10	115.083	1.083	0.000	0.000	Pass

INCC 5.1.2

Facility:	JMOX
Material balance area:	JM2G
Detector type:	AFAS
Detector id:	JSR_02
Electronics id:	JSR-12
Inventory change code:	
I/O code:	
Measurement date:	24.12.10 13:29:37
Results file name:	4CAN2937.VER
Inspection number:	
Item id:	PWR TF
Stratum id:	XXXX
Material type:	Pu
Original declared mass:	0.000
Measurement option:	Verification
Data source:	Review disk file
QC tests:	On
Error calculation:	Sample method
Accidentals method:	Measured
Inspector name:	
Passive comment:	

Isotopics id:	Default			
Isotopics source code:	OD			
Pu238:	0.0000 +-	0.0000	0.0000 +-	0.0000
Pu239:	0.0000 +-	0.0000	0.0000 +-	0.0000
Pu240:	100.0000 +-	0.0000	100.0000 +-	0.0000
Pu241:	0.0000 +-	0.0000	0.0000 +-	0.0000
Pu242:	0.0000 +-	0.0000	0.0000 +-	0.0000
Pu date:	00.01.01		24.12.10	
Am241:	0.0000 +-	0.0000	0.0000 +-	0.0000
Am date:	00.01.01		24.12.10	

Predelay:	1.50
Gate length:	64.00
2nd gate length:	64.00
High voltage:	1720
Die away time:	50.0000
Efficiency:	0.0126
Multiplicity deadtime:	0.0000
Coefficient A deadtime:	0.0000
Coefficient B deadtime:	0.0000
Coefficient C deadtime:	0.0000
Doubles gate fraction:	0.0001
Triples gate fraction:	0.0001
Normalization constant:	1.0000 +- 0.0000
Passive singles bkgrnd:	0.000 +- 0.000
Passive doubles bkgrnd:	0.000 +- 0.000
Passive triples bkgrnd:	0.000 +- 0.000
Passive scaler1 bkgrnd:	0.000
Passive scaler2 bkgrnd:	0.000
Number passive cycles:	10
Count time (sec):	60

Passive error messages

No known alpha calibration

Results

Singles:	0.252 +-	0.252
Doubles:	0.000 +-	0.000
Triples:	0.000 +-	0.000
Scaler 1:	99.417 +-	0.382
Scaler 2:	0.000 +-	0.000

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	151	0	0	5847	0	Pass
2	0	0	0	5875	0	Pass
3	0	0	0	5940	0	Pass
4	0	0	0	5974	0	Pass
5	0	0	0	5929	0	Pass
6	0	0	0	6083	0	Pass
7	0	0	0	6021	0	Pass
8	0	0	0	5953	0	Pass
9	0	0	0	6040	0	Pass
10	0	0	0	5988	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	2.517	0.000	0.000	0.000	Pass
2	0.000	0.000	0.000	0.000	Pass
3	0.000	0.000	0.000	0.000	Pass
4	0.000	0.000	0.000	0.000	Pass
5	0.000	0.000	0.000	0.000	Pass
6	0.000	0.000	0.000	0.000	Pass
7	0.000	0.000	0.000	0.000	Pass
8	0.000	0.000	0.000	0.000	Pass
9	0.000	0.000	0.000	0.000	Pass
10	0.000	0.000	0.000	0.000	Pass

INCC 6.23.2.9 HM32 Not Validated

```
                  Facility: PPFF
      Material balance area: XXXX
             Detector type: PASS
               Detector id: AFAS-P TOP
            Electronics id: UDL-1
          Measurement date: 24.12.10     14:00:24
         Results file name: 4CA00024.NOR
          Inspection number:
        Measurement option: Normalization
               Data source: IAEA DataZ file
     Detector configuration: Passive
                  QC tests: On
       Accidentals method: Measured
           Inspector name:
                  Comment:
           Ending comment: xx


                 Predelay:      1.500
              Gate length:     64.000
             High voltage:       1720
            Die away time:    50.0000
               Efficiency:     0.0126
     Multiplicity deadtime:     0.0000
    Coefficient A deadtime:     0.0000
    Coefficient B deadtime:     0.0000
   *Coefficient C deadtime:     0.0000
     Doubles gate fraction:     0.0001
     Triples gate fraction:     0.0001

    Passive singles bkgrnd:      1.798  +-      0.046
    Passive doubles bkgrnd:      0.005  +-      0.008
    Passive triples bkgrnd:      0.000  +-      0.000
    Passive scaler1 bkgrnd:      0.000
    Passive scaler2 bkgrnd:      0.000
          Number of cycles:         10
          Count time (sec):     60.000
```

Summed raw data

```
                Number of good cycles:         10
                    Total count time:        600
           Shift register singles sum:      59913
Shift register reals + accidentals sum:        921
       Shift register accidentals sum:        402
        Shift register 1st scaler sum:          0
        Shift register 2nd scaler sum:          0
```

Summed multiplicity distributions

```
         R+A sums       A sums
```

Messages

Normalization test -- data quality is inadequate

Results

```
                    Singles:     98.057  +-      0.302
                    Doubles:      0.860  +-      0.059
                    Triples:      0.000  +-      0.000
```



```
                    Scaler 1:      0.000  +-      0.000
                    Scaler 2:      0.000  +-      0.000
```

Normalization results for reference source: H4-694

```
         Current normalization constant:      1.000  +-      0.000
            Cf252 expected singles rate:     97.294  +-      0.218
            Cf252 measured singles rate:     98.057  +-      0.302
         Singles rate expected/measured:      0.992  +-      0.040
             New normalization constant:      1.000  +-      0.000
                 Normalization test  --  data quality is inadequate.
```

Cycle raw data

Count time (sec): 60.000

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	5896	84	37	0	0	Pass
2	5903	95	40	0	0	Pass
3	6035	92	39	0	0	Pass
4	5950	103	50	0	0	Pass
5	6050	87	38	0	0	Pass
6	5996	81	51	0	0	Pass
7	6027	80	38	0	0	Pass
8	5996	108	39	0	0	Pass
9	6014	97	42	0	0	Pass
10	6046	94	28	0	0	Pass

Cycle DTC rate data

Cycle	Singles	Doubles	Triples	QC Tests
1	96.468	0.778	0.000	Pass
2	96.585	0.912	0.000	Pass
3	98.785	0.878	0.000	Pass
4	97.368	0.878	0.000	Pass
5	99.035	0.812	0.000	Pass
6	98.135	0.495	0.000	Pass
7	98.652	0.695	0.000	Pass
8	98.135	1.145	0.000	Pass
9	98.435	0.912	0.000	Pass
10	98.968	1.095	0.000	Pass

INCC 5.1.2

```
                Facility:  JMOX
   Material balance area:  JM2G
           Detector type:  AFAS
             Detector id:  JSR_03
          Electronics id:  JSR-12
  Inventory change code:
                 I/O code:
       Measurement date:  24.12.10  13:45:43
      Results file name:  4CAN4543.VER
      Inspection number:
                Item id:  PWR COLLAR
             Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
     Measurement option:  Verification
            Data source:  Review disk file
              QC tests:  On
      Error calculation:  Sample method
     Accidentals method:  Measured
         Inspector name:
        Passive comment:

           Isotopics id:  Default
  Isotopics source code:  OD
                  Pu238:    0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu239:    0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                  Pu241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu242:    0.0000 +-   0.0000      0.0000 +-   0.0000
                Pu date:  00.01.01              24.12.10
                  Am241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                Am date:  00.01.01              24.12.10

               Predelay:      1.50
            Gate length:     64.00
        2nd gate length:     64.00
           High voltage:   1720
          Die away time:     50.0000
             Efficiency:      0.1620
  Multiplicity deadtime:     86.5000
 Coefficient A deadtime:      0.3458
 Coefficient B deadtime:      0.0299
 Coefficient C deadtime:      0.0000
  Doubles gate fraction:      0.0001
  Triples gate fraction:      0.0001

 Normalization constant:      1.0000 +-    0.0000

 Passive singles bkgrnd:      0.000 +-     0.000
 Passive doubles bkgrnd:      0.000 +-     0.000
 Passive triples bkgrnd:      0.000 +-     0.000
 Passive scaler1 bkgrnd:      0.000
 Passive scaler2 bkgrnd:      0.000

  Number passive cycles:         10
        Count time (sec):        60
```

Passive error messages

No passive calibration curve calibration
No known alpha calibration

Results

```
                    Singles:     1725.632 +-     1.123
                    Doubles:      295.043 +-     1.131
                    Triples:        0.000 +-     0.000
                   Scaler 1:       15.183 +-     0.204
                   Scaler 2:        0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	103274	29211	11305	942	0	Pass
2	103543	29270	11434	867	0	Pass
3	103353	28783	11298	862	0	Pass
4	103576	28899	11208	981	0	Pass
5	103392	28751	11523	878	0	Pass
6	103183	28837	11172	901	0	Pass
7	103626	28914	11320	884	0	Pass
8	103714	29197	11416	936	0	Pass
9	103795	29250	11453	926	0	Pass
10	103769	29408	11471	933	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	1721.490	298.611	0.000	0.000	Pass
2	1725.974	297.444	0.000	0.000	Pass
3	1722.807	291.590	0.000	0.000	Pass
4	1726.524	295.026	0.000	0.000	Pass
5	1723.457	287.305	0.000	0.000	Pass
6	1719.972	294.592	0.000	0.000	Pass
7	1727.358	293.409	0.000	0.000	Pass
8	1728.825	296.527	0.000	0.000	Pass
9	1730.175	296.794	0.000	0.000	Pass
10	1729.742	299.129	0.000	0.000	Pass

```
INCC 6.23.2.9 HM32 Not Validated

                  Facility: PPFF
      Material balance area: XXXX
             Detector type: PASS
               Detector id: AFAS-P COLLAR
            Electronics id: UDL-1
          Measurement date: 24.12.10     14:19:38
         Results file name: 4CA01938.NOR
         Inspection number:
        Measurement option: Normalization
               Data source: IAEA DataZ file
     Detector configuration: Passive
                 QC tests: On
       Accidentals method: Measured
           Inspector name:
                  Comment:
           Ending comment: xx


                 Predelay:      1.500
              Gate length:     64.000
             High voltage:       1720
            Die away time:    50.0000
               Efficiency:     0.1620
     Multiplicity deadtime:    86.5000
    Coefficient A deadtime:     0.3458
    Coefficient B deadtime:     0.0299
   *Coefficient C deadtime:     0.0000
     Doubles gate fraction:     0.0001
     Triples gate fraction:     0.0001

    Passive singles bkgrnd:     11.807  +-      0.143
    Passive doubles bkgrnd:      0.005  +-      0.008
    Passive triples bkgrnd:      0.000  +-      0.000
    Passive scaler1 bkgrnd:      0.000
    Passive scaler2 bkgrnd:      0.000
          Number of cycles:         10
          Count time (sec):     60.000

Summed raw data

                Number of good cycles:         10
                    Total count time:        600
           Shift register singles sum:    1035928
Shift register reals + accidentals sum:    291310
       Shift register accidentals sum:     114507
        Shift register 1st scaler sum:          0
        Shift register 2nd scaler sum:          0

Summed multiplicity distributions

         R+A sums       A sums

Messages

Normalization test -- data quality is inadequate

Results

                              Singles:   1714.998  +-      1.458
                              Doubles:    294.843  +-      1.099
                              Triples:      0.000  +-      0.000
```



```
                              Scaler 1:      0.000  +-      0.000
                              Scaler 2:      0.000  +-      0.000

Normalization results for reference source: H4-694

         Current normalization constant:      1.000  +-      0.000
            Cf252 expected doubles rate:    288.417  +-      0.438
            Cf252 measured doubles rate:    294.843  +-      1.099
         Doubles rate expected/measured:      0.978  +-      0.004
             New normalization constant:      1.000  +-      0.000
                 Normalization test  --  data quality is inadequate.
              Measured percent precision:      0.373
              Required percent precision:      0.300
        Repeat measurement for at least:      0.000

Cycle raw data

Count time (sec):      60.000

Cycle   Singles      R+A        A        Scaler1    Scaler2  QC Tests
   1     103293     28844     11293          0          0 Pass
   2     103539     28854     11512          0          0 Pass
   3     103434     29097     11260          0          0 Pass
   4     103944     29175     11506          0          0 Pass
   5     103907     29568     11531          0          0 Pass
   6     103201     29136     11260          0          0 Pass
   7     103754     29172     11619          0          0 Pass
   8     103304     29044     11361          0          0 Pass
   9     103852     29204     11731          0          0 Pass
  10     103700     29216     11434          0          0 Pass

Cycle DTC rate data

Cycle      Singles       Doubles       Triples  QC Tests
   1      1710.000       292.686         0.000  Pass
   2      1714.101       289.201         0.000  Pass
   3      1712.350       297.456         0.000  Pass
   4      1720.853       294.655         0.000  Pass
   5      1720.236       300.792         0.000  Pass
   6      1708.466       298.106         0.000  Pass
   7      1717.685       292.720         0.000  Pass
   8      1710.183       294.887         0.000  Pass
   9      1719.319       291.386         0.000  Pass
  10      1716.785       296.539         0.000  Pass
```



```
INCC 5.1.2

              Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_03
         Electronics id:  JSR-12
  Inventory change code:
               I/O code:
       Measurement date:  24.12.10  14:02:48
      Results file name:  4CA00248.VER
      Inspection number:
                Item id:  PWR BF
             Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
     Measurement option:  Verification
            Data source:  Review disk file
              QC tests:  On
      Error calculation:  Sample method
     Accidentals method:  Measured
         Inspector name:
        Passive comment:

           Isotopics id:  Default
  Isotopics source code:  OD
                 Pu238:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu239:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                 Pu241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu242:    0.0000 +-   0.0000      0.0000 +-   0.0000
               Pu date:  00.01.01                24.12.10
                Am241:    0.0000 +-   0.0000      0.0000 +-   0.0000
               Am date:  00.01.01                24.12.10

              Predelay:      1.50
           Gate length:     64.00
       2nd gate length:     64.00
          High voltage:   1720
           Die away time:     50.0000
             Efficiency:      0.0127
  Multiplicity deadtime:      0.0000
 Coefficient A deadtime:      0.0000
 Coefficient B deadtime:      0.0000
 Coefficient C deadtime:      0.0000
  Doubles gate fraction:      0.0001
  Triples gate fraction:      0.0001

 Normalization constant:      1.0000 +-    0.0000

 Passive singles bkgrnd:      0.000 +-     0.000
 Passive doubles bkgrnd:      0.000 +-     0.000
 Passive triples bkgrnd:      0.000 +-     0.000
 Passive scaler1 bkgrnd:      0.000
 Passive scaler2 bkgrnd:      0.000

  Number passive cycles:         10
       Count time (sec):         60

Passive error messages

No passive calibration curve calibration
No known alpha calibration
```



```
Results

                              Singles:        149.938 +-      0.682
                              Doubles:          1.998 +-      0.054
                              Triples:          0.000 +-      0.000
                             Scaler 1:        107.208 +-      0.344
                             Scaler 2:          0.000 +-      0.000

Passive cycle raw data

Cycle   Singles      R+A         A       Scaler1    Scaler2  QC Tests
   1       9034      184        80        6359          0  Pass
   2       8976      220        93        6496          0  Pass
   3       8741      203        78        6355          0  Pass
   4       9098      205        78        6425          0  Pass
   5       8891      203       101        6364          0  Pass
   6       9214      199        82        6401          0  Pass
   7       9079      209        79        6465          0  Pass
   8       8935      223        92        6450          0  Pass
   9       8952      199        82        6454          0  Pass
  10       9043      207        88        6556          0  Pass

Passive cycle rate data

Cycle      Singles       Doubles       Triples          Mass  QC Tests
   1       150.567         1.733         0.000         0.000  Pass
   2       149.600         2.117         0.000         0.000  Pass
   3       145.683         2.083         0.000         0.000  Pass
   4       151.633         2.117         0.000         0.000  Pass
   5       148.183         1.700         0.000         0.000  Pass
   6       153.567         1.950         0.000         0.000  Pass
   7       151.317         2.167         0.000         0.000  Pass
   8       148.917         2.183         0.000         0.000  Pass
   9       149.200         1.950         0.000         0.000  Pass
  10       150.717         1.983         0.000         0.000  Pass
```

INCC 6.23.2.9 HM32 Not Validated

```
                  Facility: PPFF
      Material balance area: XXXX
             Detector type: UDL-1
               Detector id: AFAS-P BOTTOM
            Electronics id: PASS
          Measurement date: 24.12.10     14:33:27
         Results file name: 4CA03327.NOR
         Inspection number:
        Measurement option: Normalization
               Data source: IAEA DataZ file
     Detector configuration: Passive
                 QC tests: On
       Accidentals method: Measured
           Inspector name:
                  Comment:
           Ending comment: xx


                 Predelay:      1.500
              Gate length:     64.000
             High voltage:       1720
            Die away time:    50.0000
               Efficiency:     0.0127
     Multiplicity deadtime:     0.0000
    Coefficient A deadtime:     0.0000
    Coefficient B deadtime:     0.0000
   *Coefficient C deadtime:     0.0000
     Doubles gate fraction:     0.0001
     Triples gate fraction:     0.0001

    Passive singles bkgrnd:      1.258  +-      0.058
    Passive doubles bkgrnd:      0.005  +-      0.008
    Passive triples bkgrnd:      0.000  +-      0.000
    Passive scaler1 bkgrnd:      0.000
    Passive scaler2 bkgrnd:      0.000
          Number of cycles:         10
          Count time (sec):     60.000
```

Summed raw data

```
                Number of good cycles:         10
                    Total count time:        600
           Shift register singles sum:      64416
Shift register reals + accidentals sum:      1116
       Shift register accidentals sum:        448
        Shift register 1st scaler sum:          0
        Shift register 2nd scaler sum:          0
```

Summed multiplicity distributions

```
        R+A sums       A sums
```

Messages

Normalization test -- data quality is inadequate

Results

```
                    Singles:    106.102  +-      0.368
                    Doubles:      1.108  +-      0.077
                    Triples:      0.000  +-      0.000
```



```
                    Scaler 1:      0.000  +-      0.000
                    Scaler 2:      0.000  +-      0.000
```

Normalization results for reference source: H4-694

```
          Current normalization constant:      1.000  +-      0.000
             Cf252 expected singles rate:    104.272  +-      0.172
             Cf252 measured singles rate:    106.102  +-      0.368
          Singles rate expected/measured:      0.983  +-      0.039
              New normalization constant:      1.000  +-      0.000
                   Normalization test  --  data quality is inadequate.
```

Cycle raw data

Count time (sec): 60.000

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	6519	118	40	0	0	Pass
2	6331	119	52	0	0	Pass
3	6408	110	40	0	0	Pass
4	6402	118	36	0	0	Pass
5	6405	105	49	0	0	Pass
6	6443	103	38	0	0	Pass
7	6418	132	51	0	0	Pass
8	6470	108	51	0	0	Pass
9	6580	126	49	0	0	Pass
10	6440	77	42	0	0	Pass

Cycle DTC rate data

Cycle	Singles	Doubles	Triples	QC Tests
1	107.392	1.295	0.000	Pass
2	104.258	1.112	0.000	Pass
3	105.542	1.162	0.000	Pass
4	105.442	1.362	0.000	Pass
5	105.492	0.928	0.000	Pass
6	106.125	1.078	0.000	Pass
7	105.708	1.345	0.000	Pass
8	106.575	0.945	0.000	Pass
9	108.408	1.278	0.000	Pass
10	106.075	0.578	0.000	Pass

INCC 5.1.2

```
                Facility:  JMOX
  Material balance area:  JM2G
           Detector type:  AFAS
             Detector id:  JSR_01
          Electronics id:  JSR-12
  Inventory change code:
                 I/O code:
       Measurement date:  25.01.17  10:08:07
      Results file name:  51HK0807.VER
      Inspection number:
                Item id:  BWR TF
             Stratum id:  XXXX
           Material type:  Pu
 Original declared mass:  0.000
     Measurement option:  Verification
            Data source:  Review disk file
              QC tests:  On
      Error calculation:  Sample method
     Accidentals method:  Measured
         Inspector name:
        Passive comment:

           Isotopics id:  Default
  Isotopics source code:  OD
                 Pu238:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu239:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                 Pu241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu242:    0.0000 +-   0.0000      0.0000 +-   0.0000
               Pu date:  00.01.01                25.01.17
                 Am241:    0.0000 +-   0.0000      0.0000 +-   0.0000
               Am date:  00.01.01                25.01.17

               Predelay:      1.50
            Gate length:     64.00
        2nd gate length:     64.00
           High voltage:   1720
          Die away time:     50.0000
             Efficiency:      0.0080
  Multiplicity deadtime:      0.0000
 Coefficient A deadtime:      0.0000
 Coefficient B deadtime:      0.0000
 Coefficient C deadtime:      0.0000
  Doubles gate fraction:      0.0001
  Triples gate fraction:      0.0001

 Normalization constant:      1.0000 +-    0.0000

 Passive singles bkgrnd:      0.000 +-     0.000
 Passive doubles bkgrnd:      0.000 +-     0.000
 Passive triples bkgrnd:      0.000 +-     0.000
 Passive scaler1 bkgrnd:      0.000
 Passive scaler2 bkgrnd:      0.000

  Number passive cycles:         10
        Count time (sec):        60
```

Passive error messages

Known alpha analysis error

Results

```
                    Singles:        60.807 +-     0.406
                    Doubles:         0.267 +-     0.037
                    Triples:         0.000 +-     0.000
                   Scaler 1:       107.845 +-     0.443
                   Scaler 2:         0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	3734	20	15	6422	0	Pass
2	3587	28	14	6395	0	Pass
3	3739	32	19	6509	0	Pass
4	3641	29	17	6412	0	Pass
5	3522	28	12	6660	0	Pass
6	3637	35	10	6461	0	Pass
7	3695	37	18	6555	0	Pass
8	3606	22	12	6403	0	Pass
9	3744	38	21	6473	0	Pass
10	3579	39	10	6417	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	62.233	0.083	0.000	0.000	Pass
2	59.783	0.233	0.000	0.000	Pass
3	62.317	0.217	0.000	0.000	Pass
4	60.683	0.200	0.000	0.000	Pass
5	58.700	0.267	0.000	0.000	Pass
6	60.617	0.417	0.000	0.000	Pass
7	61.583	0.317	0.000	0.000	Pass
8	60.100	0.167	0.000	0.000	Pass
9	62.400	0.283	0.000	0.000	Pass
10	59.650	0.483	0.000	0.000	Pass

202501_AFAS-B_Collar.txt

INCC 5.1.2

```
               Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_01
         Electronics id:  JSR-12
  Inventory change code:
              I/O code:
      Measurement date:  25.01.17  10:27:12
     Results file name:  51HK2712.VER
     Inspection number:
               Item id:  BWR COLLAR
            Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
    Measurement option:  Verification
           Data source:  Review disk file
              QC tests:  On
     Error calculation:  Sample method
    Accidentals method:  Measured
        Inspector name:
       Passive comment:

          Isotopics id:  Default
  Isotopics source code:  OD
                 Pu238:   0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu239:   0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                 Pu241:   0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu242:   0.0000 +-   0.0000      0.0000 +-   0.0000
               Pu date:  00.01.01                25.01.17
                 Am241:   0.0000 +-   0.0000      0.0000 +-   0.0000
               Am date:  00.01.01                25.01.17

              Predelay:      1.50
           Gate length:     64.00
       2nd gate length:     64.00
          High voltage:   1720
         Die away time:     50.0000
            Efficiency:      0.1970
 Multiplicity deadtime:    160.0000
Coefficient A deadtime:      0.6419
Coefficient B deadtime:      0.1030
Coefficient C deadtime:      0.0000
 Doubles gate fraction:      0.0001
 Triples gate fraction:      0.0001

Normalization constant:      1.0000 +-    0.0000

Passive singles bkgrnd:      0.000 +-     0.000
Passive doubles bkgrnd:      0.000 +-     0.000
Passive triples bkgrnd:      0.000 +-     0.000
Passive scaler1 bkgrnd:      0.000
Passive scaler2 bkgrnd:      0.000

 Number passive cycles:         10
      Count time (sec):         60

Passive error messages

Known alpha analysis error
```

(1)

202501_AFAS-B_Collar.txt

Results

```
                 Singles:      2050.470 +-     1.886
                 Doubles:       438.952 +-     1.370
                 Triples:         0.000 +-     0.000
                Scaler 1:         7.262 +-     0.166
                Scaler 2:         0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	123109	42113	16346	435	0	Pass
2	123244	42211	16205	406	0	Pass
3	123229	42680	16159	396	0	Pass
4	122622	42223	15815	387	0	Pass
5	123161	42758	16235	478	0	Pass
6	122781	42105	15772	437	0	Pass
7	122183	42174	16032	478	0	Pass
8	123236	42856	16284	439	0	Pass
9	123297	42483	16022	457	0	Pass
10	123015	42256	15964	444	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	2052.493	430.016	0.000	0.000	Pass
2	2054.744	434.005	0.000	0.000	Pass
3	2054.494	442.600	0.000	0.000	Pass
4	2044.371	440.711	0.000	0.000	Pass
5	2053.360	442.633	0.000	0.000	Pass
6	2047.022	439.460	0.000	0.000	Pass
7	2037.049	436.270	0.000	0.000	Pass
8	2054.611	443.451	0.000	0.000	Pass
9	2055.628	441.599	0.000	0.000	Pass
10	2050.925	438.777	0.000	0.000	Pass

(2)

202501_AFAS-B_Bottom Fork.txt

INCC 5.1.2

```
               Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_02
         Electronics id:  JSR-12
  Inventory change code:
              I/O code:
      Measurement date:  25.01.17  10:44:20
     Results file name:  51HK4420.VER
     Inspection number:
               Item id:  BWR BF
            Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
    Measurement option:  Verification
           Data source:  Review disk file
              QC tests:  On
     Error calculation:  Sample method
    Accidentals method:  Measured
        Inspector name:
       Passive comment:

          Isotopics id:  Default
  Isotopics source code:  OD
                 Pu238:   0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu239:   0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                 Pu241:   0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu242:   0.0000 +-   0.0000      0.0000 +-   0.0000
               Pu date:  00.01.01                25.01.17
                 Am241:   0.0000 +-   0.0000      0.0000 +-   0.0000
               Am date:  00.01.01                25.01.17

              Predelay:      1.50
           Gate length:     64.00
       2nd gate length:     64.00
          High voltage:   1720
         Die away time:     50.0000
            Efficiency:      0.0060
 Multiplicity deadtime:      0.0000
Coefficient A deadtime:      0.0000
Coefficient B deadtime:      0.0000
Coefficient C deadtime:      0.0000
 Doubles gate fraction:      0.0001
 Triples gate fraction:      0.0001

Normalization constant:      1.0000 +-    0.0000

Passive singles bkgrnd:      0.000 +-     0.000
Passive doubles bkgrnd:      0.000 +-     0.000
Passive triples bkgrnd:      0.000 +-     0.000
Passive scaler1 bkgrnd:      0.000
Passive scaler2 bkgrnd:      0.000

 Number passive cycles:         10
      Count time (sec):         60

Passive error messages

No known alpha calibration
```

(1)

202501_AFAS-B_Bottom Fork.txt

Results

```
                 Singles:       111.972 +-     0.520
                 Doubles:         1.232 +-     0.080
                 Triples:         0.000 +-     0.000
                Scaler 1:         3.358 +-     0.080
                Scaler 2:         0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	6606	98	47	207	0	Pass
2	6604	113	39	204	0	Pass
3	6758	158	51	214	0	Pass
4	6926	133	47	200	0	Pass
5	6650	105	39	197	0	Pass
6	6748	116	43	204	0	Pass
7	6669	123	40	231	0	Pass
8	6743	129	60	191	0	Pass
9	6677	112	47	173	0	Pass
10	6802	118	53	194	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	110.100	0.850	0.000	0.000	Pass
2	110.067	1.233	0.000	0.000	Pass
3	112.633	1.783	0.000	0.000	Pass
4	115.433	1.433	0.000	0.000	Pass
5	110.833	1.100	0.000	0.000	Pass
6	112.467	1.217	0.000	0.000	Pass
7	111.150	1.383	0.000	0.000	Pass
8	112.383	1.150	0.000	0.000	Pass
9	111.283	1.083	0.000	0.000	Pass
10	113.367	1.083	0.000	0.000	Pass

(2)

INCC 5.1.2

```
              Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_02
         Electronics id:  JSR-12
  Inventory change code:
              I/O code:
      Measurement date:  25.01.17  10:59:24
     Results file name:  51HK5924.VER
     Inspection number:
               Item id:  PWR TF
            Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
    Measurement option:  Verification
           Data source:  Review disk file
              QC tests:  On
     Error calculation:  Sample method
    Accidentals method:  Measured
        Inspector name:
       Passive comment:

          Isotopics id:  Default
  Isotopics source code:  OD
                 Pu238:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu239:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                 Pu241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu242:    0.0000 +-   0.0000      0.0000 +-   0.0000
               Pu date:  00.01.01                25.01.17
                 Am241:    0.0000 +-   0.0000      0.0000 +-   0.0000
               Am date:  00.01.01                25.01.17

              Predelay:      1.50
           Gate length:     64.00
       2nd gate length:     64.00
          High voltage:   1720
        Die away time:     50.0000
            Efficiency:     0.0126
 Multiplicity deadtime:     0.0000
Coefficient A deadtime:     0.0000
Coefficient B deadtime:     0.0000
Coefficient C deadtime:     0.0000
 Doubles gate fraction:     0.0001
 Triples gate fraction:     0.0001

Normalization constant:     1.0000 +-    0.0000

Passive singles bkgrnd:     0.000 +-     0.000
Passive doubles bkgrnd:     0.000 +-     0.000
Passive triples bkgrnd:     0.000 +-     0.000
Passive scaler1 bkgrnd:     0.000
Passive scaler2 bkgrnd:     0.000

 Number passive cycles:        10
      Count time (sec):        60
```

Passive error messages

No known alpha calibration

Results

```
                 Singles:        2.013 +-     0.055
                 Doubles:       -0.002 +-     0.002
                 Triples:        0.000 +-     0.000
                Scaler 1:       96.497 +-     0.489
                Scaler 2:        0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	132	0	0	5900	0	Pass
2	115	0	0	5807	0	Pass
3	107	0	0	5687	0	Pass
4	135	0	0	5880	0	Pass
5	124	0	1	5912	0	Pass
6	111	0	0	5650	0	Pass
7	106	0	0	5774	0	Pass
8	129	0	0	5737	0	Pass
9	128	0	0	5840	0	Pass
10	121	0	0	5711	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	2.200	0.000	0.000	0.000	Pass
2	1.917	0.000	0.000	0.000	Pass
3	1.783	0.000	0.000	0.000	Pass
4	2.250	0.000	0.000	0.000	Pass
5	2.067	-0.017	0.000	0.000	Pass
6	1.850	0.000	0.000	0.000	Pass
7	1.767	0.000	0.000	0.000	Pass
8	2.150	0.000	0.000	0.000	Pass
9	2.133	0.000	0.000	0.000	Pass
10	2.017	0.000	0.000	0.000	Pass

INCC 6.23.2.9 HM32 Not Validated

```
                 Facility: PPFF
   Material balance area: XXXX
           Detector type: PASS
             Detector id: AFAS-P TOP
          Electronics id: UDL-1
       Measurement date: 25.01.17     11:31:22
      Results file name: 51HL3122.NOR
      Inspection number:
     Measurement option: Normalization
            Data source: IAEA DataZ file
 Detector configuration: Passive
               QC tests: On
     Accidentals method: Measured
         Inspector name:
                Comment:
          Ending comment: xx


              Predelay:      1.500
           Gate length:     64.000
          High voltage:       1720
        Die away time:     50.0000
            Efficiency:     0.0126
 Multiplicity deadtime:     0.0000
Coefficient A deadtime:     0.0000
Coefficient B deadtime:     0.0000
*Coefficient C deadtime:    0.0000
 Doubles gate fraction:     0.0001
 Triples gate fraction:     0.0001

Passive singles bkgrnd:     1.423  +-     0.039
Passive doubles bkgrnd:     0.010  +-     0.009
Passive triples bkgrnd:     0.000  +-     0.000
Passive scaler1 bkgrnd:     0.000
Passive scaler2 bkgrnd:     0.000
```

Messages

Normalization test -- data quality is inadequate

Summed raw data

```
          Number of good cycles:        10
                Total count time:      600
       Shift register singles sum:   57989
Shift register reals + accidentals sum:  910
   Shift register accidentals sum:    378
    Shift register 1st scaler sum:      0
    Shift register 2nd scaler sum:      0
```

Summed multiplicity distributions

```
     R+A sums       A sums
       Number of cycles:        10
       Count time (sec):     60.000
```

Results

```
                 Singles:    95.225  +-     0.314
                 Doubles:     0.877  +-     0.097
                 Triples:     0.000  +-     0.000
```



```
                Scaler 1:     0.000  +-     0.000
                Scaler 2:     0.000  +-     0.000
```

Normalization results for reference source: H4-694

```
Current normalization constant:     1.000  +-     0.000
   Cf252 expected singles rate:    94.684  +-     0.212
   Cf252 measured singles rate:    95.225  +-     0.314
Singles rate expected/measured:     0.994  +-     0.040
    New normalization constant:     1.000  +-     0.000
        Normalization test  --  data quality is inadequate.
```

Cycle raw data

Count time (sec): 60.000

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	5773	85	34	0	0	Pass
2	5827	72	50	0	0	Pass
3	5845	121	29	0	0	Pass
4	5751	90	29	0	0	Pass
5	5818	89	50	0	0	Pass
6	5865	94	30	0	0	Pass
7	5770	94	45	0	0	Pass
8	5779	92	35	0	0	Pass
9	5683	79	37	0	0	Pass
10	5878	94	39	0	0	Pass

Cycle DTC rate data

Cycle	Singles	Doubles	Triples	QC Tests
1	94.793	0.840	0.000	Pass
2	95.693	0.357	0.000	Pass
3	95.993	1.523	0.000	Pass
4	94.427	1.007	0.000	Pass
5	95.543	0.640	0.000	Pass
6	96.327	1.057	0.000	Pass
7	94.743	0.807	0.000	Pass
8	94.893	0.940	0.000	Pass
9	93.293	0.690	0.000	Pass
10	96.543	0.907	0.000	Pass

INCC 5.1.2

```
              Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_03
         Electronics id:  JSR-12
  Inventory change code:
              I/O code:
      Measurement date:  25.01.17  11:18:26
     Results file name:  51HL1826.VER
     Inspection number:
               Item id:  PWR COLLAR
            Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
    Measurement option:  Verification
           Data source:  Review disk file
              QC tests:  On
     Error calculation:  Theoretical method
    Accidentals method:  Measured
        Inspector name:
       Passive comment:

          Isotopics id:  Default
  Isotopics source code:  CO
                 Pu238:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu239:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                 Pu241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu242:    0.0000 +-   0.0000      0.0000 +-   0.0000
               Pu date:  00.01.01                25.01.17
                 Am241:    0.0000 +-   0.0000      0.0000 +-   0.0000
               Am date:  00.01.01                25.01.17

              Predelay:      1.50
           Gate length:     64.00
       2nd gate length:     64.00
          High voltage:   1720
         Die away time:     50.0000
            Efficiency:      0.1620
 Multiplicity deadtime:     86.5000
Coefficient A deadtime:      0.3458
Coefficient B deadtime:      0.0299
Coefficient C deadtime:      0.0000
 Doubles gate fraction:      0.0001
 Triples gate fraction:      0.0001

Normalization constant:      1.0000 +-    0.0000

Passive singles bkgrnd:      0.000 +-     0.000
Passive doubles bkgrnd:      0.000 +-     0.000
Passive triples bkgrnd:      0.000 +-     0.000
Passive scaler1 bkgrnd:      0.000
Passive scaler2 bkgrnd:      0.000

 Number passive cycles:         10
      Count time (sec):         60
```

Passive error messages

No known alpha calibration

Results

```
                 Singles:      1675.991 +-     2.040
                 Doubles:       286.923 +-     1.414
                 Triples:         0.000 +-     0.000
                Scaler 1:        14.532 +-     1.205
                Scaler 2:         0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	100221	27924	10786	874	0	Pass
2	99937	27859	10706	864	0	Pass
3	100299	27577	10742	828	0	Pass
4	100234	28283	10743	881	0	Pass
5	100293	28030	10598	892	0	Pass
6	100359	28069	10981	891	0	Pass
7	101043	28229	10727	843	0	Pass
8	100762	27807	11036	822	0	Pass
9	101027	27998	10984	908	0	Pass
10	101274	28370	10789	916	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	1670.591	285.798	0.000	0.000	Pass
2	1665.857	286.048	0.000	0.000	Pass
3	1671.892	280.746	0.000	0.000	Pass
4	1670.808	292.502	0.000	0.000	Pass
5	1671.792	290.701	0.000	0.000	Pass
6	1672.892	284.965	0.000	0.000	Pass
7	1684.295	291.870	0.000	0.000	Pass
8	1679.611	279.679	0.000	0.000	Pass
9	1684.028	283.732	0.000	0.000	Pass
10	1688.146	293.188	0.000	0.000	Pass

INCC 6.23.2.9 HM32 Not Validated

```
                 Facility: PPFF
   Material balance area: XXXX
           Detector type: PASS
             Detector id: AFAS-P COLLAR
          Electronics id: UDL-1
        Measurement date: 25.01.17     11:48:40
       Results file name: 51HL4840.NOR
       Inspection number:
      Measurement option: Normalization
             Data source: IAEA DataZ file
 Detector configuration: Passive
               QC tests: On
     Accidentals method: Measured
         Inspector name:
                Comment:
          Ending comment: xx


              Predelay:      1.500
           Gate length:     64.000
          High voltage:       1720
         Die away time:     50.0000
            Efficiency:      0.1620
 Multiplicity deadtime:     86.5000
Coefficient A deadtime:      0.3458
Coefficient B deadtime:      0.0299
*Coefficient C deadtime:     0.0000
 Doubles gate fraction:      0.0001
 Triples gate fraction:      0.0001

Passive singles bkgrnd:      9.065  +-      0.101
Passive doubles bkgrnd:      0.010  +-      0.009
Passive triples bkgrnd:      0.000  +-      0.000
Passive scaler1 bkgrnd:      0.000
Passive scaler2 bkgrnd:      0.000
      Number of cycles:         10
      Count time (sec):     60.000
```

Summed raw data

```
          Number of good cycles:         10
                Total count time:        600
       Shift register singles sum:    1003312
Shift register reals + accidentals sum:    279904
   Shift register accidentals sum:    107170
    Shift register 1st scaler sum:         0
    Shift register 2nd scaler sum:         0
```

Summed multiplicity distributions

R+A sums A sums

Messages

Normalization test -- data quality is inadequate

Results

```
                 Singles:   1663.363  +-      2.415
                 Doubles:    288.047  +-      1.137
                 Triples:      0.000  +-      0.000
```



```
                Scaler 1:      0.000  +-      0.000
                Scaler 2:      0.000  +-      0.000
```

Normalization results for reference source: H4-694

```
      Current normalization constant:      1.000  +-      0.000
         Cf252 expected doubles rate:    280.681  +-      0.426
         Cf252 measured doubles rate:    288.047  +-      1.137
      Doubles rate expected/measured:      0.974  +-      0.004
          New normalization constant:      1.000  +-      0.000
              Normalization test  --  data quality is inadequate.
          Measured percent precision:      0.395
          Required percent precision:      0.300
    Repeat measurement for at least:       0.000
```

Cycle raw data

Count time (sec): 60.000

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	100918	28165	10866	0	0	Pass
2	99724	27713	10668	0	0	Pass
3	100369	27788	10722	0	0	Pass
4	100434	28143	10872	0	0	Pass
5	99856	27835	10675	0	0	Pass
6	100108	27571	10569	0	0	Pass
7	100178	28192	10635	0	0	Pass
8	100266	28173	10590	0	0	Pass
9	100210	27948	10712	0	0	Pass
10	101249	28376	10861	0	0	Pass

Cycle DTC rate data

Cycle	Singles	Doubles	Triples	QC Tests
1	1673.146	288.474	0.000	Pass
2	1653.241	284.237	0.000	Pass
3	1663.994	284.588	0.000	Pass
4	1665.077	288.007	0.000	Pass
5	1655.441	286.155	0.000	Pass
6	1659.642	283.520	0.000	Pass
7	1660.809	292.776	0.000	Pass
8	1662.276	293.209	0.000	Pass
9	1661.343	287.423	0.000	Pass
10	1678.665	292.077	0.000	Pass

INCC 5.1.2

```
              Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_03
         Electronics id:  JSR-12
  Inventory change code:
               I/O code:
      Measurement date:  25.01.17  11:34:30
     Results file name:  51HL3430.VER
     Inspection number:
               Item id:  PWR BF
            Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
    Measurement option:  Verification
           Data source:  Review disk file
              QC tests:  On
     Error calculation:  Sample method
    Accidentals method:  Measured
        Inspector name:
       Passive comment:

          Isotopics id:  Default
  Isotopics source code:  OD
                 Pu238:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu239:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                 Pu241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu242:    0.0000 +-   0.0000      0.0000 +-   0.0000
               Pu date:  00.01.01                25.01.17
                 Am241:    0.0000 +-   0.0000      0.0000 +-   0.0000
               Am date:  00.01.01                25.01.17

              Predelay:      1.50
          Gate length:     64.00
       2nd gate length:     64.00
         High voltage:   1720
        Die away time:     50.0000
           Efficiency:      0.0127
 Multiplicity deadtime:     0.0000
Coefficient A deadtime:     0.0000
Coefficient B deadtime:     0.0000
Coefficient C deadtime:     0.0000
 Doubles gate fraction:     0.0001
 Triples gate fraction:     0.0001

Normalization constant:     1.0000 +-    0.0000

Passive singles bkgrnd:     0.000 +-     0.000
Passive doubles bkgrnd:     0.000 +-     0.000
Passive triples bkgrnd:     0.000 +-     0.000
Passive scaler1 bkgrnd:     0.000
Passive scaler2 bkgrnd:     0.000

 Number passive cycles:        10
      Count time (sec):        60
```

Passive error messages

No passive calibration curve calibration
No known alpha calibration

Results

```
                Singles:      144.167 +-     0.782
                Doubles:        1.772 +-     0.079
                Triples:        0.000 +-     0.000
               Scaler 1:      103.407 +-     0.561
               Scaler 2:        0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	8782	191	81	6281	0	Pass
2	8658	180	83	6085	0	Pass
3	8498	189	67	6270	0	Pass
4	8661	175	76	6152	0	Pass
5	8683	203	83	6252	0	Pass
6	8499	186	83	6058	0	Pass
7	8828	178	69	6365	0	Pass
8	8435	187	78	6095	0	Pass
9	8581	196	74	6171	0	Pass
10	8875	174	102	6315	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	146.367	1.833	0.000	0.000	Pass
2	144.300	1.617	0.000	0.000	Pass
3	141.633	2.033	0.000	0.000	Pass
4	144.350	1.650	0.000	0.000	Pass
5	144.717	2.000	0.000	0.000	Pass
6	141.650	1.717	0.000	0.000	Pass
7	147.133	1.817	0.000	0.000	Pass
8	140.583	1.817	0.000	0.000	Pass
9	143.017	2.033	0.000	0.000	Pass
10	147.917	1.200	0.000	0.000	Pass

INCC 6.23.2.9 HM32 Not Validated

```
                 Facility: PPFF
   Material balance area: XXXX
           Detector type: UDL-1
             Detector id: AFAS-P BOTTOM
          Electronics id: PASS
       Measurement date: 25.01.17     12:04:07
      Results file name: 51HM0407.NOR
      Inspection number:
     Measurement option: Normalization
            Data source: IAEA DataZ file
  Detector configuration: Passive
               QC tests: On
     Accidentals method: Measured
         Inspector name:
                Comment:
          Ending comment: xx


              Predelay:      1.500
          Gate length:     64.000
         High voltage:       1720
        Die away time:    50.0000
           Efficiency:     0.0127
 Multiplicity deadtime:    0.0000
Coefficient A deadtime:    0.0000
Coefficient B deadtime:    0.0000
*Coefficient C deadtime:   0.0000
 Doubles gate fraction:    0.0001
 Triples gate fraction:    0.0001

Passive singles bkgrnd:     0.940  +-      0.098
Passive doubles bkgrnd:     0.010  +-      0.009
Passive triples bkgrnd:     0.000  +-      0.000
Passive scaler1 bkgrnd:     0.000
Passive scaler2 bkgrnd:     0.000
     Number of cycles:        10
     Count time (sec):    60.000
```

Summed raw data

```
          Number of good cycles:        10
                Total count time:      600
       Shift register singles sum:   62108
Shift register reals + accidentals sum:  1040
   Shift register accidentals sum:     431
    Shift register 1st scaler sum:       0
    Shift register 2nd scaler sum:       0
```

Summed multiplicity distributions

R+A sums A sums

Messages

Normalization test -- data quality is inadequate

Results

```
                Singles:    102.573  +-      0.506
                Doubles:      1.005  +-      0.050
                Triples:      0.000  +-      0.000
```



```
               Scaler 1:      0.000  +-      0.000
               Scaler 2:      0.000  +-      0.000
```

Normalization results for reference source: H4-694

```
      Current normalization constant:      1.000  +-      0.000
         Cf252 expected singles rate:    101.475  +-      0.167
         Cf252 measured singles rate:    102.573  +-      0.506
      Singles rate expected/measured:      0.989  +-      0.040
          New normalization constant:      1.000  +-      0.000
              Normalization test  --  data quality is inadequate.
```

Cycle raw data

Count time (sec): 60.000

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	6157	103	51	0	0	Pass
2	6258	104	35	0	0	Pass
3	6330	92	39	0	0	Pass
4	6269	105	47	0	0	Pass
5	6240	102	31	0	0	Pass
6	6101	106	36	0	0	Pass
7	6272	111	50	0	0	Pass
8	6092	104	48	0	0	Pass
9	6308	115	42	0	0	Pass
10	6081	98	52	0	0	Pass

Cycle DTC rate data

Cycle	Singles	Doubles	Triples	QC Tests
1	101.677	0.857	0.000	Pass
2	103.360	1.140	0.000	Pass
3	104.560	0.873	0.000	Pass
4	103.543	0.957	0.000	Pass
5	103.060	1.173	0.000	Pass
6	100.743	1.157	0.000	Pass
7	103.593	1.007	0.000	Pass
8	100.593	0.923	0.000	Pass
9	104.193	1.207	0.000	Pass
10	100.410	0.757	0.000	Pass

INCC 5.1.2

```
               Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_01
         Electronics id:  JSR-12
  Inventory change code:
               I/O code:
      Measurement date:  25.02.12  10:13:41
     Results file name:  52CK1341.VER
     Inspection number:
               Item id:  BWR TF
            Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
    Measurement option:  Verification
           Data source:  Review disk file
              QC tests:  On
     Error calculation:  Sample method
    Accidentals method:  Measured
        Inspector name:
       Passive comment:

           Isotopics id:  Default
  Isotopics source code:  OD
                  Pu238:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu239:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                  Pu241:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu242:   0.0000 +-   0.0000      0.0000 +-   0.0000
                Pu date:  00.01.01               25.02.12
                  Am241:   0.0000 +-   0.0000      0.0000 +-   0.0000
                Am date:  00.01.01               25.02.12

               Predelay:      1.50
            Gate length:     64.00
        2nd gate length:     64.00
           High voltage:   1720
         Die away time:     50.0000
             Efficiency:      0.0080
  Multiplicity deadtime:      0.0000
 Coefficient A deadtime:      0.0000
 Coefficient B deadtime:      0.0000
 Coefficient C deadtime:      0.0000
  Doubles gate fraction:      0.0001
  Triples gate fraction:      0.0001

 Normalization constant:      1.0000 +-    0.0000

 Passive singles bkgrnd:      0.000 +-     0.000
 Passive doubles bkgrnd:      0.000 +-     0.000
 Passive triples bkgrnd:      0.000 +-     0.000
 Passive scaler1 bkgrnd:      0.000
 Passive scaler2 bkgrnd:      0.000

  Number passive cycles:         10
       Count time (sec):         60

Passive error messages

Known alpha analysis error
```


Results

```
                 Singles:        59.478 +-     0.417
                 Doubles:         0.333 +-     0.028
                 Triples:         0.000 +-     0.000
                Scaler 1:       105.415 +-     0.291
                Scaler 2:         0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	3666	27	17	6372	0	Pass
2	3618	29	14	6370	0	Pass
3	3610	32	12	6248	0	Pass
4	3411	36	12	6324	0	Pass
5	3547	30	12	6384	0	Pass
6	3570	34	15	6372	0	Pass
7	3542	35	14	6267	0	Pass
8	3504	33	14	6278	0	Pass
9	3542	37	9	6371	0	Pass
10	3677	34	8	6263	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	61.100	0.167	0.000	0.000	Pass
2	60.300	0.250	0.000	0.000	Pass
3	60.167	0.333	0.000	0.000	Pass
4	56.850	0.400	0.000	0.000	Pass
5	59.117	0.300	0.000	0.000	Pass
6	59.500	0.317	0.000	0.000	Pass
7	59.033	0.350	0.000	0.000	Pass
8	58.400	0.317	0.000	0.000	Pass
9	59.033	0.467	0.000	0.000	Pass
10	61.283	0.433	0.000	0.000	Pass

INCC 5.1.2

```
               Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_01
         Electronics id:  JSR-12
  Inventory change code:
               I/O code:
      Measurement date:  25.02.12  10:26:44
     Results file name:  52CK2644.VER
     Inspection number:
               Item id:  BWR COLLAR
            Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
    Measurement option:  Verification
           Data source:  Review disk file
              QC tests:  On
     Error calculation:  Sample method
    Accidentals method:  Measured
        Inspector name:
       Passive comment:

           Isotopics id:  Default
  Isotopics source code:  OD
                  Pu238:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu239:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                  Pu241:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu242:   0.0000 +-   0.0000      0.0000 +-   0.0000
                Pu date:  00.01.01               25.02.12
                  Am241:   0.0000 +-   0.0000      0.0000 +-   0.0000
                Am date:  00.01.01               25.02.12

               Predelay:      1.50
            Gate length:     64.00
        2nd gate length:     64.00
           High voltage:   1720
         Die away time:     50.0000
             Efficiency:      0.1970
  Multiplicity deadtime:    160.0000
 Coefficient A deadtime:      0.6419
 Coefficient B deadtime:      0.1030
 Coefficient C deadtime:      0.0000
  Doubles gate fraction:      0.0001
  Triples gate fraction:      0.0001

 Normalization constant:      1.0000 +-    0.0000

 Passive singles bkgrnd:      0.000 +-     0.000
 Passive doubles bkgrnd:      0.000 +-     0.000
 Passive triples bkgrnd:      0.000 +-     0.000
 Passive scaler1 bkgrnd:      0.000
 Passive scaler2 bkgrnd:      0.000

  Number passive cycles:         10
       Count time (sec):         60

Passive error messages

Known alpha analysis error
```


Results

```
                 Singles:      2013.651 +-     2.053
                 Doubles:       429.578 +-     1.401
                 Triples:         0.000 +-     0.000
                Scaler 1:         7.273 +-     0.156
                Scaler 2:         0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	120839	41472	15670	450	0	Pass
2	120590	41329	15760	408	0	Pass
3	120668	41220	15469	472	0	Pass
4	119870	40646	15548	477	0	Pass
5	120779	41283	15329	413	0	Pass
6	121191	41588	15875	429	0	Pass
7	120610	41238	15569	396	0	Pass
8	121016	41348	15408	432	0	Pass
9	121104	41540	15600	472	0	Pass
10	121133	41523	15545	415	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	2014.635	430.590	0.000	0.000	Pass
2	2010.482	426.700	0.000	0.000	Pass
3	2011.783	429.738	0.000	0.000	Pass
4	1998.474	418.837	0.000	0.000	Pass
5	2013.634	433.126	0.000	0.000	Pass
6	2020.505	429.106	0.000	0.000	Pass
7	2010.815	428.369	0.000	0.000	Pass
8	2017.586	432.894	0.000	0.000	Pass
9	2019.054	432.894	0.000	0.000	Pass
10	2019.538	433.528	0.000	0.000	Pass

INCC 5.1.2

```
               Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_02
         Electronics id:  JSR-12
  Inventory change code:
              I/O code:
      Measurement date:  25.02.12  10:45:47
     Results file name:  52CK4547.VER
     Inspection number:
               Item id:  BWR BF
            Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
    Measurement option:  Verification
           Data source:  Review disk file
              QC tests:  On
     Error calculation:  Sample method
    Accidentals method:  Measured
        Inspector name:
       Passive comment:

           Isotopics id:  Default
  Isotopics source code:  OD
                  Pu238:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu239:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                  Pu241:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu242:   0.0000 +-   0.0000      0.0000 +-   0.0000
                Pu date:  00.01.01               25.02.12
                  Am241:   0.0000 +-   0.0000      0.0000 +-   0.0000
                Am date:  00.01.01               25.02.12

               Predelay:      1.50
            Gate length:     64.00
        2nd gate length:     64.00
           High voltage:   1720
          Die away time:     50.0000
             Efficiency:      0.0060
  Multiplicity deadtime:      0.0000
 Coefficient A deadtime:      0.0000
 Coefficient B deadtime:      0.0000
 Coefficient C deadtime:      0.0000
  Doubles gate fraction:      0.0001
  Triples gate fraction:      0.0001

 Normalization constant:      1.0000 +-    0.0000

 Passive singles bkgrnd:      0.000 +-     0.000
 Passive doubles bkgrnd:      0.000 +-     0.000
 Passive triples bkgrnd:      0.000 +-     0.000
 Passive scaler1 bkgrnd:      0.000
 Passive scaler2 bkgrnd:      0.000

  Number passive cycles:         10
       Count time (sec):         60

Passive error messages

No known alpha calibration
```


Results

```
                 Singles:      109.983 +-     0.388
                 Doubles:        1.085 +-     0.080
                 Triples:        0.000 +-     0.000
                Scaler 1:        3.225 +-     0.060
                Scaler 2:        0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	6650	124	44	191	0	Pass
2	6631	106	57	193	0	Pass
3	6591	100	47	188	0	Pass
4	6630	126	50	170	0	Pass
5	6640	126	51	186	0	Pass
6	6581	103	53	196	0	Pass
7	6623	134	43	194	0	Pass
8	6480	104	40	200	0	Pass
9	6466	90	43	206	0	Pass
10	6698	113	47	211	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	110.833	1.333	0.000	0.000	Pass
2	110.517	0.817	0.000	0.000	Pass
3	109.850	0.883	0.000	0.000	Pass
4	110.500	1.267	0.000	0.000	Pass
5	110.667	1.250	0.000	0.000	Pass
6	109.683	0.833	0.000	0.000	Pass
7	110.383	1.517	0.000	0.000	Pass
8	108.000	1.067	0.000	0.000	Pass
9	107.767	0.783	0.000	0.000	Pass
10	111.633	1.100	0.000	0.000	Pass

INCC 5.1.2

```
               Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_02
         Electronics id:  JSR-12
  Inventory change code:
              I/O code:
      Measurement date:  25.02.12  11:02:52
     Results file name:  52CL0252.VER
     Inspection number:
               Item id:  PWR TF
            Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
    Measurement option:  Verification
           Data source:  Review disk file
              QC tests:  On
     Error calculation:  Sample method
    Accidentals method:  Measured
        Inspector name:
       Passive comment:

           Isotopics id:  Default
  Isotopics source code:  OD
                  Pu238:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu239:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                  Pu241:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu242:   0.0000 +-   0.0000      0.0000 +-   0.0000
                Pu date:  00.01.01               25.02.12
                  Am241:   0.0000 +-   0.0000      0.0000 +-   0.0000
                Am date:  00.01.01               25.02.12

               Predelay:      1.50
            Gate length:     64.00
        2nd gate length:     64.00
           High voltage:   1720
          Die away time:     50.0000
             Efficiency:      0.0126
  Multiplicity deadtime:      0.0000
 Coefficient A deadtime:      0.0000
 Coefficient B deadtime:      0.0000
 Coefficient C deadtime:      0.0000
  Doubles gate fraction:      0.0001
  Triples gate fraction:      0.0001

 Normalization constant:      1.0000 +-    0.0000

 Passive singles bkgrnd:      0.000 +-     0.000
 Passive doubles bkgrnd:      0.000 +-     0.000
 Passive triples bkgrnd:      0.000 +-     0.000
 Passive scaler1 bkgrnd:      0.000
 Passive scaler2 bkgrnd:      0.000

  Number passive cycles:         10
       Count time (sec):         60

Passive error messages

No known alpha calibration
```


Results

```
                 Singles:        2.322 +-     0.065
                 Doubles:        0.000 +-     0.000
                 Triples:        0.000 +-     0.000
                Scaler 1:       94.895 +-     0.280
                Scaler 2:        0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	128	0	0	5692	0	Pass
2	134	0	0	5714	0	Pass
3	135	0	0	5642	0	Pass
4	133	0	0	5730	0	Pass
5	126	0	0	5802	0	Pass
6	142	0	0	5723	0	Pass
7	133	0	0	5673	0	Pass
8	167	0	0	5687	0	Pass
9	150	0	0	5664	0	Pass
10	145	0	0	5610	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	2.133	0.000	0.000	0.000	Pass
2	2.233	0.000	0.000	0.000	Pass
3	2.250	0.000	0.000	0.000	Pass
4	2.217	0.000	0.000	0.000	Pass
5	2.100	0.000	0.000	0.000	Pass
6	2.367	0.000	0.000	0.000	Pass
7	2.217	0.000	0.000	0.000	Pass
8	2.783	0.000	0.000	0.000	Pass
9	2.500	0.000	0.000	0.000	Pass
10	2.417	0.000	0.000	0.000	Pass

INCC 6.23.2.9 HM32 Not Validated

```
                  Facility: PPFF
      Material balance area: XXXX
             Detector type: PASS
               Detector id: AFAS-P TOP
            Electronics id: UDL-1
          Measurement date: 25.02.12     11:05:31
        Results file name: 52CL0531.NOR
         Inspection number:
        Measurement option: Normalization
               Data source: IAEA DataZ file
     Detector configuration: Passive
                 QC tests: On
       Accidentals method: Measured
           Inspector name:
                  Comment:
           Ending comment: xx


                 Predelay:      1.500
              Gate length:     64.000
             High voltage:       1720
            Die away time:    50.0000
               Efficiency:     0.0126
     Multiplicity deadtime:     0.0000
    Coefficient A deadtime:     0.0000
    Coefficient B deadtime:     0.0000
   *Coefficient C deadtime:     0.0000
     Doubles gate fraction:     0.0001
     Triples gate fraction:     0.0001

    Passive singles bkgrnd:      1.393  +-      0.060
    Passive doubles bkgrnd:      0.005  +-      0.005
    Passive triples bkgrnd:      0.000  +-      0.000
    Passive scaler1 bkgrnd:      0.000
    Passive scaler2 bkgrnd:      0.000
          Number of cycles:         10
          Count time (sec):     60.000
```

Summed raw data

```
                Number of good cycles:         10
                    Total count time:        600
          Shift register singles sum:      57048
Shift register reals + accidentals sum:      848
       Shift register accidentals sum:        355
        Shift register 1st scaler sum:          0
        Shift register 2nd scaler sum:          0
```

Summed multiplicity distributions

```
        R+A sums       A sums
```

Messages

Normalization test -- data quality is inadequate

Results

```
                    Singles:     93.687  +-      0.329
                    Doubles:      0.817  +-      0.053
                    Triples:      0.000  +-      0.000
```



```
                    Scaler 1:      0.000  +-      0.000
                    Scaler 2:      0.000  +-      0.000
```

Normalization results for reference source: H4-694

```
          Current normalization constant:      1.000  +-      0.000
             Cf252 expected singles rate:     92.935  +-      0.208
             Cf252 measured singles rate:     93.687  +-      0.329
          Singles rate expected/measured:      0.992  +-      0.040
              New normalization constant:      1.000  +-      0.000
                  Normalization test  --  data quality is inadequate.
```

Cycle raw data

Count time (sec): 60.000

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	5721	85	39	0	0	Pass
2	5728	83	33	0	0	Pass
3	5735	77	36	0	0	Pass
4	5585	77	26	0	0	Pass
5	5786	78	39	0	0	Pass
6	5737	89	34	0	0	Pass
7	5750	103	40	0	0	Pass
8	5663	96	31	0	0	Pass
9	5717	87	38	0	0	Pass
10	5626	73	39	0	0	Pass

Cycle DTC rate data

Cycle	Singles	Doubles	Triples	QC Tests
1	93.957	0.762	0.000	Pass
2	94.073	0.828	0.000	Pass
3	94.190	0.678	0.000	Pass
4	91.690	0.845	0.000	Pass
5	95.040	0.645	0.000	Pass
6	94.223	0.912	0.000	Pass
7	94.440	1.045	0.000	Pass
8	92.990	1.078	0.000	Pass
9	93.890	0.812	0.000	Pass
10	92.373	0.562	0.000	Pass

INCC 5.1.2

```
                Facility:  JMOX
   Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_03
         Electronics id:  JSR-12
  Inventory change code:
                I/O code:
       Measurement date:  25.02.13  14:44:27
      Results file name:  52D04427.VER
      Inspection number:
                Item id:  PWR COLLAR
             Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
     Measurement option:  Verification
            Data source:  Review disk file
              QC tests:  On
      Error calculation:  Theoretical method
     Accidentals method:  Measured
         Inspector name:
        Passive comment:

           Isotopics id:  Default
  Isotopics source code:  CO
                  Pu238:    0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu239:    0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                  Pu241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu242:    0.0000 +-   0.0000      0.0000 +-   0.0000
                Pu date:  00.01.01              25.02.13
                  Am241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                Am date:  00.01.01              25.02.13

               Predelay:      1.50
            Gate length:     64.00
        2nd gate length:     64.00
           High voltage:   1720
          Die away time:     50.0000
             Efficiency:      0.1620
  Multiplicity deadtime:     86.5000
 Coefficient A deadtime:      0.3458
 Coefficient B deadtime:      0.0299
 Coefficient C deadtime:      0.0000
  Doubles gate fraction:      0.0001
  Triples gate fraction:      0.0001

 Normalization constant:      1.0000 +-    0.0000
 Passive singles bkgrnd:      0.000 +-     0.000
 Passive doubles bkgrnd:      0.000 +-     0.000
 Passive triples bkgrnd:      0.000 +-     0.000
 Passive scaler1 bkgrnd:      0.000
 Passive scaler2 bkgrnd:      0.000

  Number passive cycles:         10
       Count time (sec):         60
```

Passive error messages

No known alpha calibration

Passive results


```
                  Singles:    1646.504 +-     2.020
                  Doubles:     280.236 +-     1.392
                  Triples:       0.000 +-     0.000
                 Scaler 1:      14.405 +-     1.200
                 Scaler 2:       0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	98841	27305	10441	892	0	Pass
2	98702	26975	10439	822	0	Pass
3	98821	27180	10352	924	0	Pass
4	98955	27575	10369	892	0	Pass
5	98218	27024	10417	871	0	Pass
6	99177	27401	10501	825	0	Pass
7	98262	26698	10336	815	0	Pass
8	98789	27356	10467	864	0	Pass
9	98866	27556	10571	847	0	Pass
10	99131	27502	10633	891	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	1647.585	281.227	0.000	0.000	Pass
2	1645.267	275.757	0.000	0.000	Pass
3	1647.251	280.626	0.000	0.000	Pass
4	1649.485	286.930	0.000	0.000	Pass
5	1637.198	276.940	0.000	0.000	Pass
6	1653.186	281.828	0.000	0.000	Pass
7	1637.932	272.855	0.000	0.000	Pass
8	1646.718	281.644	0.000	0.000	Pass
9	1648.001	283.245	0.000	0.000	Pass
10	1652.419	281.311	0.000	0.000	Pass

```
INCC 6.23.2.9 HM32 Not Validated

                   Facility: PPFF
       Material balance area: XXXX
               Detector type: PASS
                 Detector id: AFAS-P COLLAR
             Electronics id: UDL-1
          Measurement date: 25.02.13     14:50:38
         Results file name: 52D05038.NOR
          Inspection number:
        Measurement option: Normalization
                Data source: IAEA DataZ file
      Detector configuration: Passive
                  QC tests: On
        Accidentals method: Measured
            Inspector name:
                   Comment:
            Ending comment: xx


                  Predelay:      1.500
               Gate length:     64.000
              High voltage:       1720
             Die away time:    50.0000
                Efficiency:     0.1620
      Multiplicity deadtime:    86.5000
     Coefficient A deadtime:     0.3458
     Coefficient B deadtime:     0.0299
    *Coefficient C deadtime:     0.0000
      Doubles gate fraction:     0.0001
      Triples gate fraction:     0.0001

     Passive singles bkgrnd:      8.890  +-      0.126
     Passive doubles bkgrnd:      0.000  +-      0.004
     Passive triples bkgrnd:      0.000  +-      0.000
     Passive scaler1 bkgrnd:      0.000
     Passive scaler2 bkgrnd:      0.000

Messages

Normalization test -- data quality is inadequate

Summed raw data

                Number of good cycles:         10
                    Total count time:        600
           Shift register singles sum:     986221
Shift register reals + accidentals sum:     272279
       Shift register accidentals sum:     103565
        Shift register 1st scaler sum:          0
        Shift register 2nd scaler sum:          0

Summed multiplicity distributions

         R+A sums       A sums
           Number of cycles:         10
           Count time (sec):     60.000

Results

                                Singles:   1635.045  +-      1.883
                                Doubles:    281.350  +-      1.154
                                Triples:      0.000  +-      0.000
```



```
                                Scaler 1:      0.000  +-      0.000
                                Scaler 2:      0.000  +-      0.000

Normalization results for reference source: H4-694

          Current normalization constant:      1.000  +-      0.000
             Cf252 expected doubles rate:    275.271  +-      0.418
             Cf252 measured doubles rate:    281.350  +-      1.154
          Doubles rate expected/measured:      0.978  +-      0.004
              New normalization constant:      1.000  +-      0.000
                  Normalization test  --  data quality is inadequate.
               Measured percent precision:      0.410
               Required percent precision:      0.300
         Repeat measurement for at least:      0.000

Cycle raw data

Count time (sec):      60.000

Cycle   Singles      R+A        A        Scaler1    Scaler2  QC Tests
   1      98446      27257      10386          0          0 Pass
   2      98662      27314      10308          0          0 Pass
   3      98691      27311      10205          0          0 Pass
   4      99026      27058      10439          0          0 Pass
   5      98320      27227      10174          0          0 Pass
   6      98720      27441      10437          0          0 Pass
   7      99290      27760      10632          0          0 Pass
   8      98007      26866      10110          0          0 Pass
   9      98519      27036      10434          0          0 Pass
  10      98540      27009      10440          0          0 Pass

Cycle DTC rate data

Cycle      Singles       Doubles       Triples  QC Tests
   1      1632.109       281.343         0.000  Pass
   2      1635.710       283.595         0.000  Pass
   3      1636.194       285.262         0.000  Pass
   4      1641.779       277.141         0.000  Pass
   5      1630.009       284.378         0.000  Pass
   6      1636.677       283.561         0.000  Pass
   7      1646.180       285.630         0.000  Pass
   8      1624.791       279.424         0.000  Pass
   9      1633.326       276.857         0.000  Pass
  10      1633.677       276.307         0.000  Pass
```



```
INCC 5.1.2

               Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_03
        Electronics id:  JSR-12
  Inventory change code:
               I/O code:
      Measurement date:  25.02.13  15:04:33
     Results file name:  52DP0433.VER
     Inspection number:
               Item id:  PWR BF
            Stratum id:  XXXX
         Material type:  Pu
 Original declared mass:  0.000
     Measurement option:  Verification
            Data source:  Review disk file
              QC tests:  On
      Error calculation:  Sample method
     Accidentals method:  Measured
         Inspector name:
        Passive comment:

           Isotopics id:  Default
  Isotopics source code:  OD
                 Pu238:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu239:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                 Pu241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu242:    0.0000 +-   0.0000      0.0000 +-   0.0000
               Pu date:  00.01.01              25.02.13
                 Am241:    0.0000 +-   0.0000      0.0000 +-   0.0000
               Am date:  00.01.01              25.02.13

               Predelay:      1.50
            Gate length:     64.00
        2nd gate length:     64.00
           High voltage:   1720
          Die away time:     50.0000
             Efficiency:      0.0127
  Multiplicity deadtime:      0.0000
 Coefficient A deadtime:      0.0000
 Coefficient B deadtime:      0.0000
 Coefficient C deadtime:      0.0000
  Doubles gate fraction:      0.0001
  Triples gate fraction:      0.0001

 Normalization constant:      1.0000 +-    0.0000

 Passive singles bkgrnd:      0.000 +-     0.000
 Passive doubles bkgrnd:      0.000 +-     0.000
 Passive triples bkgrnd:      0.000 +-     0.000
 Passive scaler1 bkgrnd:      0.000
 Passive scaler2 bkgrnd:      0.000

  Number passive cycles:         10
        Count time (sec):         60

Passive error messages

No passive calibration curve calibration
No known alpha calibration
```



```
Results

                                Singles:        141.260 +-      0.494
                                Doubles:          1.983 +-      0.081
                                Triples:          0.000 +-      0.000
                               Scaler 1:        101.353 +-      0.527
                               Scaler 2:          0.000 +-      0.000

Passive cycle raw data

Cycle   Singles      R+A         A       Scaler1    Scaler2  QC Tests
   1      8417        188        67        6120          0  Pass
   2      8566        192        74        6043          0  Pass
   3      8570        204        78        6215          0  Pass
   4      8304        171        79        6108          0  Pass
   5      8505        201        57        5880          0  Pass
   6      8453        176        67        6199          0  Pass
   7      8368        188        63        5967          0  Pass
   8      8594        223        86        6089          0  Pass
   9      8518        186        72        6078          0  Pass
  10      8461        181        77        6113          0  Pass

Passive cycle rate data

Cycle      Singles       Doubles       Triples          Mass  QC Tests
   1      140.283         2.017         0.000         0.000  Pass
   2      142.767         1.967         0.000         0.000  Pass
   3      142.833         2.100         0.000         0.000  Pass
   4      138.400         1.533         0.000         0.000  Pass
   5      141.750         2.400         0.000         0.000  Pass
   6      140.883         1.817         0.000         0.000  Pass
   7      139.467         2.083         0.000         0.000  Pass
   8      143.233         2.283         0.000         0.000  Pass
   9      141.967         1.900         0.000         0.000  Pass
  10      141.017         1.733         0.000         0.000  Pass
```

INCC 6.23.2.9 HM32 Not Validated

```
                  Facility: PPFF
      Material balance area: XXXX
             Detector type: UDL-1
               Detector id: AFAS-P BOTTOM
           Electronics id: PASS
        Measurement date: 25.02.13     15:06:34
         Results file name: 52DP0634.NOR
         Inspection number:
       Measurement option: Normalization
              Data source: IAEA DataZ file
     Detector configuration: Passive
                 QC tests: On
       Accidentals method: Measured
           Inspector name:
                  Comment:
           Ending comment: xx


                 Predelay:      1.500
              Gate length:     64.000
             High voltage:       1720
            Die away time:    50.0000
               Efficiency:     0.0127
     Multiplicity deadtime:     0.0000
    Coefficient A deadtime:     0.0000
    Coefficient B deadtime:     0.0000
   *Coefficient C deadtime:     0.0000
     Doubles gate fraction:     0.0001
     Triples gate fraction:     0.0001

    Passive singles bkgrnd:      0.983  +-      0.053
    Passive doubles bkgrnd:      0.000  +-      0.004
    Passive triples bkgrnd:      0.000  +-      0.000
    Passive scaler1 bkgrnd:      0.000
    Passive scaler2 bkgrnd:      0.000
```

Messages

Normalization test -- data quality is inadequate

Summed raw data

```
                Number of good cycles:        10
                   Total count time:        600
          Shift register singles sum:      60794
Shift register reals + accidentals sum:     1016
       Shift register accidentals sum:       388
        Shift register 1st scaler sum:         0
        Shift register 2nd scaler sum:         0
```

Summed multiplicity distributions

```
        R+A sums       A sums
          Number of cycles:        10
          Count time (sec):    60.000
```

Results

```
                          Singles:    100.340  +-      0.361
                          Doubles:      1.047  +-      0.059
                          Triples:      0.000  +-      0.000
```



```
                          Scaler 1:      0.000  +-      0.000
                          Scaler 2:      0.000  +-      0.000
```

Normalization results for reference source: H4-694

```
        Current normalization constant:      1.000  +-      0.000
           Cf252 expected singles rate:     99.519  +-      0.164
           Cf252 measured singles rate:    100.340  +-      0.361
        Singles rate expected/measured:      0.992  +-      0.040
            New normalization constant:      1.000  +-      0.000
                Normalization test  --  data quality is inadequate.
```

Cycle raw data

Count time (sec): 60.000

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	6134	105	36	0	0	Pass
2	6133	88	52	0	0	Pass
3	5992	100	36	0	0	Pass
4	6207	108	46	0	0	Pass
5	6117	105	37	0	0	Pass
6	6027	84	29	0	0	Pass
7	6035	98	36	0	0	Pass
8	6090	112	47	0	0	Pass
9	6042	107	37	0	0	Pass
10	6017	109	32	0	0	Pass

Cycle DTC rate data

Cycle	Singles	Doubles	Triples	QC Tests
1	101.250	1.150	0.000	Pass
2	101.233	0.600	0.000	Pass
3	98.883	1.067	0.000	Pass
4	102.467	1.033	0.000	Pass
5	100.967	1.133	0.000	Pass
6	99.467	0.917	0.000	Pass
7	99.600	1.033	0.000	Pass
8	100.517	1.083	0.000	Pass
9	99.717	1.167	0.000	Pass
10	99.300	1.283	0.000	Pass

INCC 5.1.2

```
                Facility:  JMOX
  Material balance area:  JM2G
           Detector type:  AFAS
             Detector id:  JSR_01
          Electronics id:  JSR-12
  Inventory change code:
                 I/O code:
       Measurement date:  25.03.07  11:03:22
      Results file name:  537L0322.VER
      Inspection number:
                Item id:  BWR TF
             Stratum id:  XXXX
           Material type:  Pu
 Original declared mass:  0.000
     Measurement option:  Verification
            Data source:  Review disk file
              QC tests:  On
      Error calculation:  Sample method
     Accidentals method:  Measured
         Inspector name:
        Passive comment:

            Isotopics id:  Default
  Isotopics source code:  OD
                  Pu238:    0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu239:    0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                  Pu241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu242:    0.0000 +-   0.0000      0.0000 +-   0.0000
                Pu date:  00.01.01                25.03.07
                  Am241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                Am date:  00.01.01                25.03.07

               Predelay:      1.50
            Gate length:     64.00
        2nd gate length:     64.00
           High voltage:   1720
          Die away time:     50.0000
             Efficiency:      0.0080
  Multiplicity deadtime:      0.0000
 Coefficient A deadtime:      0.0000
 Coefficient B deadtime:      0.0000
 Coefficient C deadtime:      0.0000
  Doubles gate fraction:      0.0001
  Triples gate fraction:      0.0001

 Normalization constant:      1.0000 +-    0.0000

 Passive singles bkgrnd:      0.000 +-     0.000
 Passive doubles bkgrnd:      0.000 +-     0.000
 Passive triples bkgrnd:      0.000 +-     0.000
 Passive scaler1 bkgrnd:      0.000
 Passive scaler2 bkgrnd:      0.000

  Number passive cycles:         10
        Count time (sec):         60
```

Passive error messages

Known alpha analysis error

Results

```
                          Singles:       59.478 +-     0.211
                          Doubles:        0.282 +-     0.038
                          Triples:        0.000 +-     0.000
                         Scaler 1:      104.185 +-     0.241
                         Scaler 2:        0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	3547	28	18	6273	0	Pass
2	3601	28	18	6311	0	Pass
3	3635	32	17	6219	0	Pass
4	3577	26	14	6249	0	Pass
5	3497	20	10	6264	0	Pass
6	3578	26	10	6237	0	Pass
7	3604	37	6	6147	0	Pass
8	3527	28	11	6271	0	Pass
9	3565	41	16	6243	0	Pass
10	3556	32	9	6297	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	59.117	0.167	0.000	0.000	Pass
2	60.017	0.167	0.000	0.000	Pass
3	60.583	0.250	0.000	0.000	Pass
4	59.617	0.200	0.000	0.000	Pass
5	58.283	0.167	0.000	0.000	Pass
6	59.633	0.267	0.000	0.000	Pass
7	60.067	0.517	0.000	0.000	Pass
8	58.783	0.283	0.000	0.000	Pass
9	59.417	0.417	0.000	0.000	Pass
10	59.267	0.383	0.000	0.000	Pass

202503_AFAS-B_Collar.txt

INCC 5.1.2

```
               Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_01
         Electronics id:  JSR-12
  Inventory change code:
              I/O code:
      Measurement date:  25.03.07  09:43:59
     Results file name:  537J4359.VER
     Inspection number:
               Item id:  BWR COLLAR
            Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
    Measurement option:  Verification
           Data source:  Review disk file
              QC tests:  On
     Error calculation:  Sample method
    Accidentals method:  Measured
        Inspector name:
       Passive comment:

           Isotopics id:  Default
  Isotopics source code:  OD
                  Pu238:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu239:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                  Pu241:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu242:   0.0000 +-   0.0000      0.0000 +-   0.0000
                Pu date:  00.01.01               25.03.07
                  Am241:   0.0000 +-   0.0000      0.0000 +-   0.0000
                Am date:  00.01.01               25.03.07

               Predelay:      1.50
            Gate length:     64.00
        2nd gate length:     64.00
           High voltage:   1720
          Die away time:     50.0000
             Efficiency:      0.1970
  Multiplicity deadtime:    160.0000
 Coefficient A deadtime:      0.6419
 Coefficient B deadtime:      0.1030
 Coefficient C deadtime:      0.0000
  Doubles gate fraction:      0.0001
  Triples gate fraction:      0.0001

 Normalization constant:      1.0000 +-    0.0000

 Passive singles bkgrnd:      0.000 +-     0.000
 Passive doubles bkgrnd:      0.000 +-     0.000
 Passive triples bkgrnd:      0.000 +-     0.000
 Passive scaler1 bkgrnd:      0.000
 Passive scaler2 bkgrnd:      0.000

  Number passive cycles:         10
       Count time (sec):         60

Passive error messages

Known alpha analysis error
```

(1)

202503_AFAS-B_Collar.txt

Results

```
                 Singles:      1981.498 +-     2.770
                 Doubles:       422.082 +-     1.837
                 Triples:         0.000 +-     0.000
                Scaler 1:         7.063 +-     0.102
                Scaler 2:         0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	119042	40687	15047	426	0	Pass
2	118168	40170	14558	407	0	Pass
3	117853	39479	14972	429	0	Pass
4	119191	40687	15123	404	0	Pass
5	118361	40336	14929	403	0	Pass
6	119223	40613	15173	451	0	Pass
7	118958	40152	15203	448	0	Pass
8	119239	40533	15336	418	0	Pass
9	119346	40612	15392	405	0	Pass
10	119140	40670	15279	447	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	1984.665	427.878	0.000	0.000	Pass
2	1970.089	427.407	0.000	0.000	Pass
3	1964.836	408.965	0.000	0.000	Pass
4	1987.150	426.610	0.000	0.000	Pass
5	1973.308	423.987	0.000	0.000	Pass
6	1987.684	424.541	0.000	0.000	Pass
7	1983.264	416.346	0.000	0.000	Pass
8	1987.951	420.486	0.000	0.000	Pass
9	1989.735	420.871	0.000	0.000	Pass
10	1986.300	423.723	0.000	0.000	Pass

(2)

202503_AFAS-B_Bottom Fork.txt

INCC 5.1.2

```
               Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_02
         Electronics id:  JSR-12
  Inventory change code:
              I/O code:
      Measurement date:  25.03.07  09:57:49
     Results file name:  537J5749.VER
     Inspection number:
               Item id:  BWR BF
            Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
    Measurement option:  Verification
           Data source:  Review disk file
              QC tests:  On
     Error calculation:  Sample method
    Accidentals method:  Measured
        Inspector name:
       Passive comment:

           Isotopics id:  Default
  Isotopics source code:  OD
                  Pu238:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu239:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                  Pu241:   0.0000 +-   0.0000      0.0000 +-   0.0000
                  Pu242:   0.0000 +-   0.0000      0.0000 +-   0.0000
                Pu date:  00.01.01               25.03.07
                  Am241:   0.0000 +-   0.0000      0.0000 +-   0.0000
                Am date:  00.01.01               25.03.07

               Predelay:      1.50
            Gate length:     64.00
        2nd gate length:     64.00
           High voltage:   1720
          Die away time:     50.0000
             Efficiency:      0.0060
  Multiplicity deadtime:      0.0000
 Coefficient A deadtime:      0.0000
 Coefficient B deadtime:      0.0000
 Coefficient C deadtime:      0.0000
  Doubles gate fraction:      0.0001
  Triples gate fraction:      0.0001

 Normalization constant:      1.0000 +-    0.0000

 Passive singles bkgrnd:      0.000 +-     0.000
 Passive doubles bkgrnd:      0.000 +-     0.000
 Passive triples bkgrnd:      0.000 +-     0.000
 Passive scaler1 bkgrnd:      0.000
 Passive scaler2 bkgrnd:      0.000

  Number passive cycles:         10
       Count time (sec):         60

Passive error messages

No known alpha calibration
```

(1)

202503_AFAS-B_Bottom Fork.txt

Results

```
                 Singles:       108.053 +-     0.346
                 Doubles:         1.265 +-     0.107
                 Triples:         0.000 +-     0.000
                Scaler 1:         3.090 +-     0.101
                Scaler 2:         0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	6466	111	48	198	0	Pass
2	6441	150	53	185	0	Pass
3	6477	102	38	161	0	Pass
4	6518	116	50	165	0	Pass
5	6420	126	40	163	0	Pass
6	6482	133	37	180	0	Pass
7	6446	95	39	194	0	Pass
8	6475	116	53	221	0	Pass
9	6654	118	63	202	0	Pass
10	6453	138	25	185	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	107.767	1.050	0.000	0.000	Pass
2	107.350	1.617	0.000	0.000	Pass
3	107.950	1.067	0.000	0.000	Pass
4	108.633	1.100	0.000	0.000	Pass
5	107.000	1.433	0.000	0.000	Pass
6	108.033	1.600	0.000	0.000	Pass
7	107.433	0.933	0.000	0.000	Pass
8	107.917	1.050	0.000	0.000	Pass
9	110.900	0.917	0.000	0.000	Pass
10	107.550	1.883	0.000	0.000	Pass

(2)

INCC 5.1.2

```
              Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_02
        Electronics id:  JSR-12
  Inventory change code:
              I/O code:
      Measurement date:  25.03.07  10:12:54
     Results file name:  537K1254.VER
     Inspection number:
               Item id:  BWR TF
            Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
    Measurement option:  Verification
           Data source:  Review disk file
              QC tests:  On
     Error calculation:  Sample method
    Accidentals method:  Measured
        Inspector name:
       Passive comment:

          Isotopics id:  Default
  Isotopics source code:  OD
                 Pu238:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu239:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                 Pu241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu242:    0.0000 +-   0.0000      0.0000 +-   0.0000
               Pu date:  00.01.01                25.03.07
                 Am241:    0.0000 +-   0.0000      0.0000 +-   0.0000
               Am date:  00.01.01                25.03.07

              Predelay:      1.50
          Gate length:     64.00
       2nd gate length:     64.00
         High voltage:   1720
        Die away time:     50.0000
           Efficiency:      0.0126
 Multiplicity deadtime:     0.0000
Coefficient A deadtime:     0.0000
Coefficient B deadtime:     0.0000
Coefficient C deadtime:     0.0000
 Doubles gate fraction:     0.0001
 Triples gate fraction:     0.0001

Normalization constant:     1.0000 +-    0.0000

Passive singles bkgrnd:     0.000 +-     0.000
Passive doubles bkgrnd:     0.000 +-     0.000
Passive triples bkgrnd:     0.000 +-     0.000
Passive scaler1 bkgrnd:     0.000
Passive scaler2 bkgrnd:     0.000

 Number passive cycles:        10
      Count time (sec):        60
```

Passive error messages

No known alpha calibration

Results

```
                Singles:        2.157 +-     0.077
                Doubles:        0.000 +-     0.000
                Triples:        0.000 +-     0.000
               Scaler 1:       93.938 +-     0.291
               Scaler 2:        0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	109	0	0	5641	0	Pass
2	127	0	0	5588	0	Pass
3	147	0	0	5560	0	Pass
4	107	0	0	5762	0	Pass
5	127	0	0	5645	0	Pass
6	125	0	0	5640	0	Pass
7	140	0	0	5635	0	Pass
8	145	0	0	5625	0	Pass
9	122	0	0	5674	0	Pass
10	145	0	0	5593	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	1.817	0.000	0.000	0.000	Pass
2	2.117	0.000	0.000	0.000	Pass
3	2.450	0.000	0.000	0.000	Pass
4	1.783	0.000	0.000	0.000	Pass
5	2.117	0.000	0.000	0.000	Pass
6	2.083	0.000	0.000	0.000	Pass
7	2.333	0.000	0.000	0.000	Pass
8	2.417	0.000	0.000	0.000	Pass
9	2.033	0.000	0.000	0.000	Pass
10	2.417	0.000	0.000	0.000	Pass

INCC 6.23.2.9 HM32 Not Validated

```
                 Facility: PPFF
     Material balance area: XXXX
             Detector type: PASS
               Detector id: AFAS-P TOP
           Electronics id: UDL-1
        Measurement date: 25.03.07     10:19:24
         Results file name: 537K1924.NOR
         Inspection number:
        Measurement option: Normalization
               Data source: IAEA DataZ file
   Detector configuration: Passive
               QC tests: On
       Accidentals method: Measured
           Inspector name:
                  Comment:
           Ending comment: xx


                Predelay:      1.500
            Gate length:     64.000
           High voltage:       1720
           Die away time:    50.0000
               Efficiency:     0.0126
     Multiplicity deadtime:     0.0000
    Coefficient A deadtime:     0.0000
    Coefficient B deadtime:     0.0000
   *Coefficient C deadtime:     0.0000
     Doubles gate fraction:     0.0001
     Triples gate fraction:     0.0001

    Passive singles bkgrnd:      1.415  +-      0.032
    Passive doubles bkgrnd:      0.007  +-      0.006
    Passive triples bkgrnd:      0.000  +-      0.000
    Passive scaler1 bkgrnd:      0.000
    Passive scaler2 bkgrnd:      0.000
         Number of cycles:         10
         Count time (sec):     60.000
```

Summed raw data

```
                Number of good cycles:         10
                     Total count time:        600
           Shift register singles sum:      56103
Shift register reals + accidentals sum:        837
        Shift register accidentals sum:        296
         Shift register 1st scaler sum:          0
         Shift register 2nd scaler sum:          0
```

Summed multiplicity distributions

R+A sums A sums

Messages

Normalization test -- data quality is inadequate

Results

```
                Singles:     92.090  +-      0.443
                Doubles:      0.895  +-      0.083
                Triples:      0.000  +-      0.000
```



```
               Scaler 1:      0.000  +-      0.000
               Scaler 2:      0.000  +-      0.000
```

Normalization results for reference source: H4-694

```
        Current normalization constant:      1.000  +-      0.000
           Cf252 expected singles rate:     91.416  +-      0.204
           Cf252 measured singles rate:     92.090  +-      0.443
        Singles rate expected/measured:      0.993  +-      0.040
            New normalization constant:      1.000  +-      0.000
                Normalization test  --  data quality is inadequate.
```

Cycle raw data

Count time (sec): 60.000

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	5659	86	28	0	0	Pass
2	5722	101	30	0	0	Pass
3	5538	68	28	0	0	Pass
4	5648	89	25	0	0	Pass
5	5732	100	29	0	0	Pass
6	5590	67	40	0	0	Pass
7	5569	73	41	0	0	Pass
8	5546	80	26	0	0	Pass
9	5631	88	27	0	0	Pass
10	5468	85	22	0	0	Pass

Cycle DTC rate data

Cycle	Singles	Doubles	Triples	QC Tests
1	92.902	0.960	0.000	Pass
2	93.952	1.177	0.000	Pass
3	90.885	0.660	0.000	Pass
4	92.718	1.060	0.000	Pass
5	94.118	1.177	0.000	Pass
6	91.752	0.443	0.000	Pass
7	91.402	0.527	0.000	Pass
8	91.018	0.893	0.000	Pass
9	92.435	1.010	0.000	Pass
10	89.718	1.043	0.000	Pass

INCC 5.1.2

```
              Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_03
         Electronics id:  JSR-12
  Inventory change code:
              I/O code:
      Measurement date:  25.03.07  10:31:25
     Results file name:  537K3125.VER
     Inspection number:
               Item id:  PWR COLLAR
            Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
    Measurement option:  Verification
           Data source:  Review disk file
              QC tests:  On
     Error calculation:  Sample method
    Accidentals method:  Measured
        Inspector name:
       Passive comment:

          Isotopics id:  Default
  Isotopics source code:  OD
                 Pu238:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu239:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                 Pu241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu242:    0.0000 +-   0.0000      0.0000 +-   0.0000
              Pu date:  00.01.01                25.03.07
                Am241:    0.0000 +-   0.0000      0.0000 +-   0.0000
              Am date:  00.01.01                25.03.07

              Predelay:      1.50
           Gate length:     64.00
       2nd gate length:     64.00
          High voltage:   1720
        Die away time:     50.0000
            Efficiency:     0.1620
 Multiplicity deadtime:    86.5000
Coefficient A deadtime:     0.3458
Coefficient B deadtime:     0.0299
Coefficient C deadtime:     0.0000
 Doubles gate fraction:     0.0001
 Triples gate fraction:     0.0001

Normalization constant:     1.0000 +-    0.0000

Passive singles bkgrnd:     0.000 +-     0.000
Passive doubles bkgrnd:     0.000 +-     0.000
Passive triples bkgrnd:     0.000 +-     0.000
Passive scaler1 bkgrnd:     0.000
Passive scaler2 bkgrnd:     0.000

 Number passive cycles:        10
      Count time (sec):        60
```

Passive error messages

No passive calibration curve calibration
No known alpha calibration

Results

```
                Singles:      1619.382 +-     2.238
                Doubles:       274.212 +-     1.283
                Triples:         0.000 +-     0.000
               Scaler 1:        13.957 +-     0.128
               Scaler 2:         0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	96712	26363	10092	852	0	Pass
2	97248	26789	10170	807	0	Pass
3	97358	26282	10083	825	0	Pass
4	96798	26062	9894	823	0	Pass
5	97786	26651	10168	851	0	Pass
6	96971	26315	10013	812	0	Pass
7	97845	27130	10166	815	0	Pass
8	96598	26358	9903	860	0	Pass
9	97192	26620	10275	880	0	Pass
10	96985	26683	10054	849	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	1612.091	271.335	0.000	0.000	Pass
2	1621.027	277.139	0.000	0.000	Pass
3	1622.861	270.135	0.000	0.000	Pass
4	1613.525	269.617	0.000	0.000	Pass
5	1629.996	274.872	0.000	0.000	Pass
6	1616.409	271.852	0.000	0.000	Pass
7	1630.980	282.893	0.000	0.000	Pass
8	1610.191	274.403	0.000	0.000	Pass
9	1620.094	272.569	0.000	0.000	Pass
10	1616.643	277.305	0.000	0.000	Pass

INCC 6.23.2.9 HM32 Not Validated

```
                 Facility: PPFF
   Material balance area: XXXX
           Detector type: PASS
             Detector id: AFAS-P COLLAR
          Electronics id: UDL-1
       Measurement date: 25.03.07     10:31:59
      Results file name: 537K3159.NOR
      Inspection number:
     Measurement option: Normalization
            Data source: IAEA DataZ file
 Detector configuration: Passive
               QC tests: On
     Accidentals method: Measured
         Inspector name:
                Comment:
          Ending comment: xx


              Predelay:      1.500
           Gate length:     64.000
          High voltage:       1720
        Die away time:     50.0000
            Efficiency:     0.1620
 Multiplicity deadtime:    86.5000
Coefficient A deadtime:     0.3458
Coefficient B deadtime:     0.0299
*Coefficient C deadtime:    0.0000
 Doubles gate fraction:     0.0001
 Triples gate fraction:     0.0001

Passive singles bkgrnd:     9.265  +-      0.124
Passive doubles bkgrnd:     0.007  +-      0.006
Passive triples bkgrnd:     0.000  +-      0.000
Passive scaler1 bkgrnd:     0.000
Passive scaler2 bkgrnd:     0.000
     Number of cycles:        10
     Count time (sec):    60.000
```

Summed raw data

```
          Number of good cycles:        10
                Total count time:       600
      Shift register singles sum:    971337
Shift register reals + accidentals sum:  265973
   Shift register accidentals sum:   101267
    Shift register 1st scaler sum:        0
    Shift register 2nd scaler sum:        0
```

Summed multiplicity distributions

R+A sums A sums

Messages

Normalization test -- data quality is inadequate

Results

```
                Singles:   1609.857  +-      1.478
                Doubles:    274.657  +-      1.452
                Triples:      0.000  +-      0.000
```



```
               Scaler 1:      0.000  +-      0.000
               Scaler 2:      0.000  +-      0.000
```

Normalization results for reference source: H4-694

```
      Current normalization constant:      1.000  +-      0.000
         Cf252 expected doubles rate:    270.995  +-      0.411
         Cf252 measured doubles rate:    274.657  +-      1.452
      Doubles rate expected/measured:      0.987  +-      0.005
          New normalization constant:      1.000  +-      0.000
              Normalization test  --  data quality is inadequate.
          Measured percent precision:      0.529
          Required percent precision:      0.300
    Repeat measurement for at least:       0.000
```

Cycle raw data

Count time (sec): 60.000

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	97162	26884	10063	0	0	Pass
2	96738	26421	10127	0	0	Pass
3	96657	26644	9918	0	0	Pass
4	97355	26599	10352	0	0	Pass
5	97278	26452	10121	0	0	Pass
6	97248	26426	9946	0	0	Pass
7	97602	26371	10268	0	0	Pass
8	97125	26946	10140	0	0	Pass
9	97161	26660	9942	0	0	Pass
10	97011	26570	10390	0	0	Pass

Cycle DTC rate data

Cycle	Singles	Doubles	Triples	QC Tests
1	1610.328	280.500	0.000	Pass
2	1603.260	271.711	0.000	Pass
3	1601.909	278.915	0.000	Pass
4	1613.546	270.929	0.000	Pass
5	1612.262	272.329	0.000	Pass
6	1611.762	274.814	0.000	Pass
7	1617.664	268.528	0.000	Pass
8	1609.712	280.250	0.000	Pass
9	1610.312	278.783	0.000	Pass
10	1607.811	269.811	0.000	Pass

INCC 5.1.2

```
               Facility:  JMOX
  Material balance area:  JM2G
          Detector type:  AFAS
            Detector id:  JSR_03
         Electronics id:  JSR-12
  Inventory change code:
              I/O code:
      Measurement date:  25.03.07  11:21:38
     Results file name:  537L2138.VER
     Inspection number:
               Item id:  PWR BF
            Stratum id:  XXXX
          Material type:  Pu
 Original declared mass:  0.000
    Measurement option:  Verification
           Data source:  Review disk file
              QC tests:  On
     Error calculation:  Sample method
    Accidentals method:  Measured
        Inspector name:
       Passive comment:

          Isotopics id:  Default
  Isotopics source code:  OD
                 Pu238:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu239:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu240:  100.0000 +-   0.0000    100.0000 +-   0.0000
                 Pu241:    0.0000 +-   0.0000      0.0000 +-   0.0000
                 Pu242:    0.0000 +-   0.0000      0.0000 +-   0.0000
               Pu date:  00.01.01               25.03.07
                 Am241:    0.0000 +-   0.0000      0.0000 +-   0.0000
               Am date:  00.01.01               25.03.07

               Predelay:      1.50
           Gate length:     64.00
        2nd gate length:     64.00
          High voltage:   1720
         Die away time:     50.0000
            Efficiency:      0.0127
 Multiplicity deadtime:      0.0000
Coefficient A deadtime:      0.0000
Coefficient B deadtime:      0.0000
Coefficient C deadtime:      0.0000
 Doubles gate fraction:      0.0001
 Triples gate fraction:      0.0001

Normalization constant:      1.0000 +-    0.0000

Passive singles bkgrnd:      0.000 +-     0.000
Passive doubles bkgrnd:      0.000 +-     0.000
Passive triples bkgrnd:      0.000 +-     0.000
Passive scaler1 bkgrnd:      0.000
Passive scaler2 bkgrnd:      0.000

 Number passive cycles:         10
      Count time (sec):         60
```

Passive error messages

No passive calibration curve calibration
No known alpha calibration

Results

```
                 Singles:      139.468 +-     0.440
                 Doubles:        1.797 +-     0.084
                 Triples:        0.000 +-     0.000
                Scaler 1:      100.162 +-     0.388
                Scaler 2:        0.000 +-     0.000
```

Passive cycle raw data

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	8227	170	68	6100	0	Pass
2	8497	196	86	5978	0	Pass
3	8443	170	76	6078	0	Pass
4	8424	187	78	5929	0	Pass
5	8347	184	95	5985	0	Pass
6	8335	171	76	5945	0	Pass
7	8406	205	72	5938	0	Pass
8	8373	204	74	6104	0	Pass
9	8380	168	74	5951	0	Pass
10	8249	196	74	6089	0	Pass

Passive cycle rate data

Cycle	Singles	Doubles	Triples	Mass	QC Tests
1	137.117	1.700	0.000	0.000	Pass
2	141.617	1.833	0.000	0.000	Pass
3	140.717	1.567	0.000	0.000	Pass
4	140.400	1.817	0.000	0.000	Pass
5	139.117	1.483	0.000	0.000	Pass
6	138.917	1.583	0.000	0.000	Pass
7	140.100	2.217	0.000	0.000	Pass
8	139.550	2.167	0.000	0.000	Pass
9	139.667	1.567	0.000	0.000	Pass
10	137.483	2.033	0.000	0.000	Pass

INCC 6.23.2.9 HM32 Not Validated

```
                 Facility: PPFF
   Material balance area: XXXX
           Detector type: UDL-1
             Detector id: AFAS-P BOTTOM
          Electronics id: PASS
       Measurement date: 25.03.07     11:24:16
      Results file name: 537L2416.NOR
       Inspection number:
      Measurement option: Normalization
             Data source: IAEA DataZ file
  Detector configuration: Passive
               QC tests: On
     Accidentals method: Measured
         Inspector name:
                Comment:
          Ending comment: xx


               Predelay:      1.500
           Gate length:     64.000
          High voltage:       1720
         Die away time:     50.0000
            Efficiency:      0.0127
 Multiplicity deadtime:      0.0000
Coefficient A deadtime:      0.0000
Coefficient B deadtime:      0.0000
*Coefficient C deadtime:     0.0000
 Doubles gate fraction:      0.0001
 Triples gate fraction:      0.0001

Passive singles bkgrnd:      1.082  +-      0.026
Passive doubles bkgrnd:      0.007  +-      0.006
Passive triples bkgrnd:      0.000  +-      0.000
Passive scaler1 bkgrnd:      0.000
Passive scaler2 bkgrnd:      0.000
```

Messages

Normalization test -- data quality is inadequate

Summed raw data

```
            Number of good cycles:         10
                 Total count time:        600
        Shift register singles sum:      60043
Shift register reals + accidentals sum:    949
   Shift register accidentals sum:        354
    Shift register 1st scaler sum:          0
    Shift register 2nd scaler sum:          0
```

Summed multiplicity distributions

```
      R+A sums       A sums
        Number of cycles:         10
        Count time (sec):     60.000
```

Results

```
                 Singles:     98.990  +-      0.493
                 Doubles:      0.985  +-      0.060
                 Triples:      0.000  +-      0.000
```



```
                Scaler 1:      0.000  +-      0.000
                Scaler 2:      0.000  +-      0.000
```

Normalization results for reference source: H4-694

```
      Current normalization constant:      1.000  +-      0.000
         Cf252 expected singles rate:     97.971  +-      0.161
         Cf252 measured singles rate:     98.990  +-      0.493
      Singles rate expected/measured:      0.990  +-      0.040
          New normalization constant:      1.000  +-      0.000
              Normalization test  --  data quality is inadequate.
```

Cycle raw data

Count time (sec): 60.000

Cycle	Singles	R+A	A	Scaler1	Scaler2	QC Tests
1	6068	89	42	0	0	Pass
2	6071	91	47	0	0	Pass
3	5956	95	26	0	0	Pass
4	5963	106	36	0	0	Pass
5	5977	86	30	0	0	Pass
6	5861	84	34	0	0	Pass
7	6143	96	44	0	0	Pass
8	5871	98	28	0	0	Pass
9	6072	92	31	0	0	Pass
10	6061	112	36	0	0	Pass

Cycle DTC rate data

Cycle	Singles	Doubles	Triples	QC Tests
1	100.052	0.777	0.000	Pass
2	100.102	0.727	0.000	Pass
3	98.185	1.143	0.000	Pass
4	98.302	1.160	0.000	Pass
5	98.535	0.927	0.000	Pass
6	96.602	0.827	0.000	Pass
7	101.302	0.860	0.000	Pass
8	96.768	1.160	0.000	Pass
9	100.118	1.010	0.000	Pass
10	99.935	1.260	0.000	Pass

【IPCA2 性能確認試験】

(1)　4.1　長期管理限界の妥当性確認

(2)　4.2　ハードウェアの修理及び動作確認

(3)　4.3　測定パラメータの評価

CUI//SP-PROPIN

Annual IPCA2 Performance Report for JFY24

LA-CP-25-20218

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March 2025

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Contents

Acronyms

cps	counts per second
HPGe	High Purity Germanium
IAEA	International Atomic Energy Agency
ICS	Integrated Cryocooling System
IPCA2	Improved Plutonium Canister Assay System 2
JAEA	Japan Atomic Energy Agency
JSGO	Japan Safeguards Office
LANL	Los Alamos National Laboratory
MIC	Multi-Instrument Collect
NMCC	Nuclear Material Control Center

1. Overview

This report summarizes the results of the monthly control measurements of the Improved Plutonium Canister Assay System 2 (IPCA2) performed over the period of November 2024 through March 2025 and presents the performance overview for JFY24. Monthly measurements were replaced by periodically measurement due to the abbreviated timeframe allowed since the contract approval. Measurements of plutonium neutron detection efficiency and curium stability were performed and analyzed. In addition to these measurements, the operating parameter were confirmed through a series of measurements, which are documented in this report. According to an earlier contractual agreement, the consensus was reached to discontinue HPGe control measurements starting in JFY21 as the HPGe gamma spectra showed deteriorated performance on all three gamma detectors [1].

All the JFY24 results are shown with respect to the control bounds established based on historical data collected May 2013 through March 2024; the use of AmLi was discontinued starting in JFY20. The Pu efficiency measurements demonstrated that the performance of the IPCA2 during this reporting period was stable within 2 σ level, apart from one measurement. The average Pu efficiency for the JFY24 period was 7.28% ± 0.07. Measurements were compared to room temperature and humidity and no dependence was observed. In May 2022, IAEA provided the R7780 device (a Shift Register, Multiplicity and Time Recorder), colloquially known as the UDL1 for testing and evaluation. Following rigorous performance evaluation summarized in [2], the UDL1 was installed at IPCA2 for testing during regular IPCA2 control measurements.

Repairs were successfully made to the IPCA2 Power Supply Box. A new commercial off the shelf power supply was purchased and installed. The new power supply was a direct replacement, so no changes to the electrical drawings are necessary. The repair fixed the other suspected issues with JSR-15 and Combo Box. A detailed discussion on the repairs can be found in section 5.

2. Plutonium Efficiency

2.1. Efficiency Monitoring

Plutonium efficiency measurements were performed between November 2024 and March 2025. The JSR15, the standard shift register used on IPCA2, results are reported along with UDL1 results. The LANL plutonium standard, FZC158 (823.6 neutrons s^{-1} emission rate), was used in all measurements. This source was placed in the IPCA2 for a duration of 3600 s during which 120 cycles of 30 s were used to calculate a Singles rate (in counts per second, cps). The Singles rate was divided by the source emission rate to determine an efficiency, as shown in Figure 1. Average efficiency corresponding to the JFY24 control period was calculated and corresponds to 7.28% ± 0.07% for the JSR15 data. All JSR15 measurements were within the control chart 2σ bands, denoted with dotted lines, except for one as shown in Figure 1. The one measurement that is outside of 2σ occurred on March 4, 2025. At this time, the HPGe detectors had been removed, therefore changing the neutron scattering profile. For all the measurements the UDL1 and JSR15 results agreed within statistical uncertainties. The UDL1 measurements were acquired using multiplicity mode setting and data was analyzed using LANL INCC 6. The IPCA2 measurements on March 4, 2025, were performed during the JMOX meeting at LANL with JAEA and JSGO attendance.

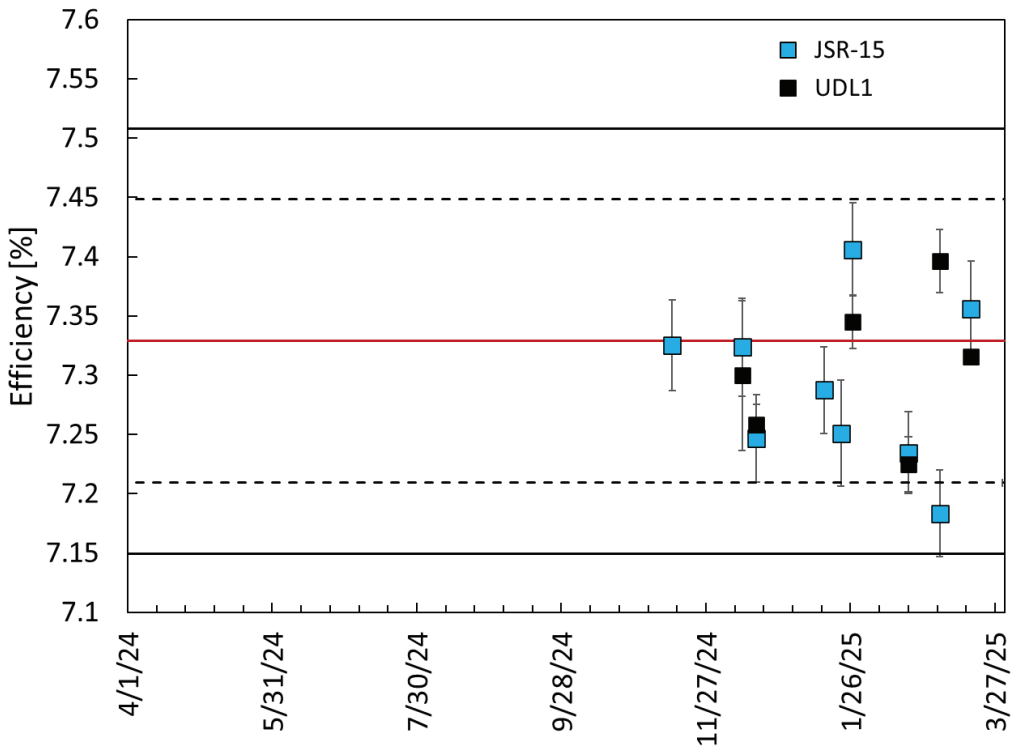

Figure 1: Pu efficiency measurements for JFY24 acquired using standard IPCA2 data acquisition system (blue squares) and UDL1 Multiplicity mode acquisition (black squares).

These results in Figure 1 provide an overview of the overall IPCA2 performance during the JFY24 reporting period and confirm its reproducibility.

All the Pu efficiency measurements since May 2013 are summarized in Figure 2. Note that these measurements are plotted against the original control bounds established from data taken during the 2013 to 2017 time period [3].

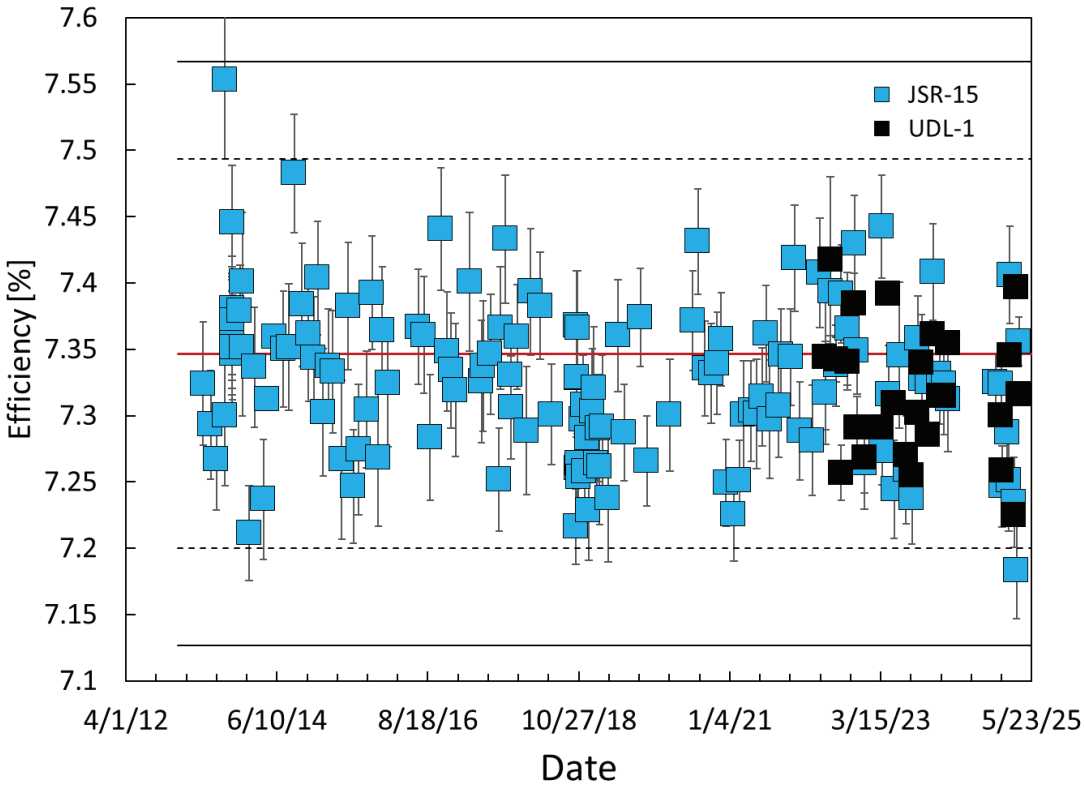

Figure 2: Pu efficiency measurements for May 2013 – March 2024 acquired using standard IPCA2 data acquisition system (blue squares) and UDL1 list mode acquisition (black squares).

2.1. Efficiency Dependence on Environmental Conditions

Room temperature and humidity data has been collected alongside IPCA2 periodic measurements. JFY24 plutonium efficiency measurements exhibit no dependence on humidity, Figure 3, or room temperature, Figure 4. Since Los Alamos has experienced a dry winter season, the humidity has been very stable at 16% for all the measurements performed. No correlation in the efficiency as a function of temperature was observed.

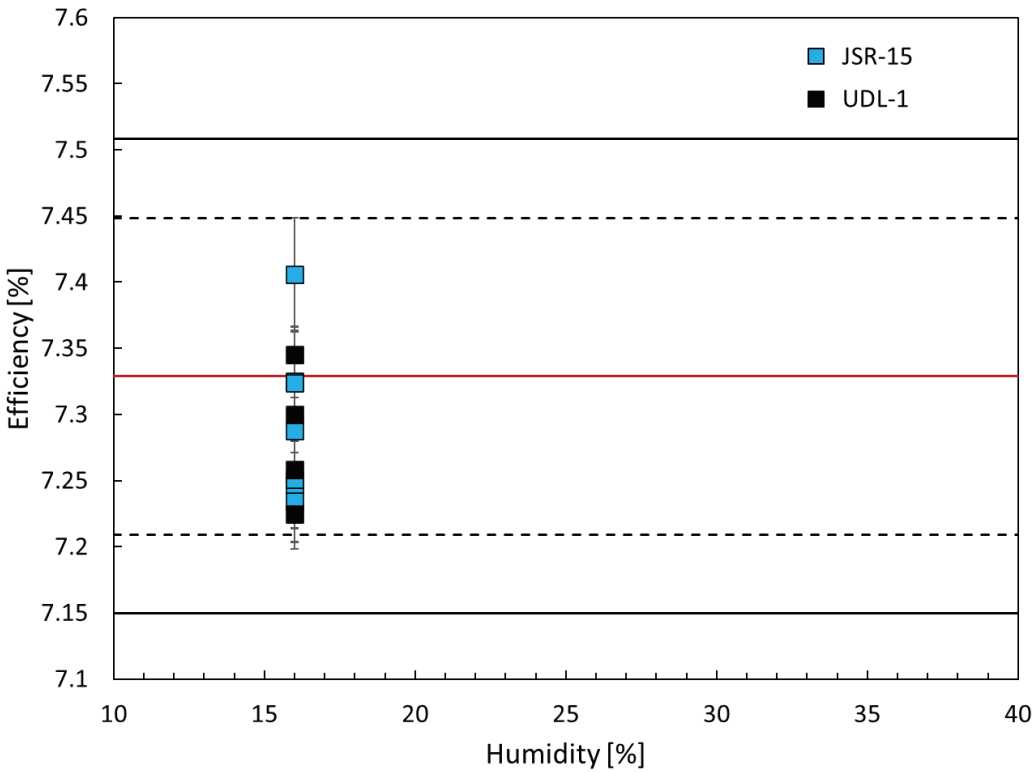

Figure 3: JFY24 Pu efficiency measurements as a function of humidity.

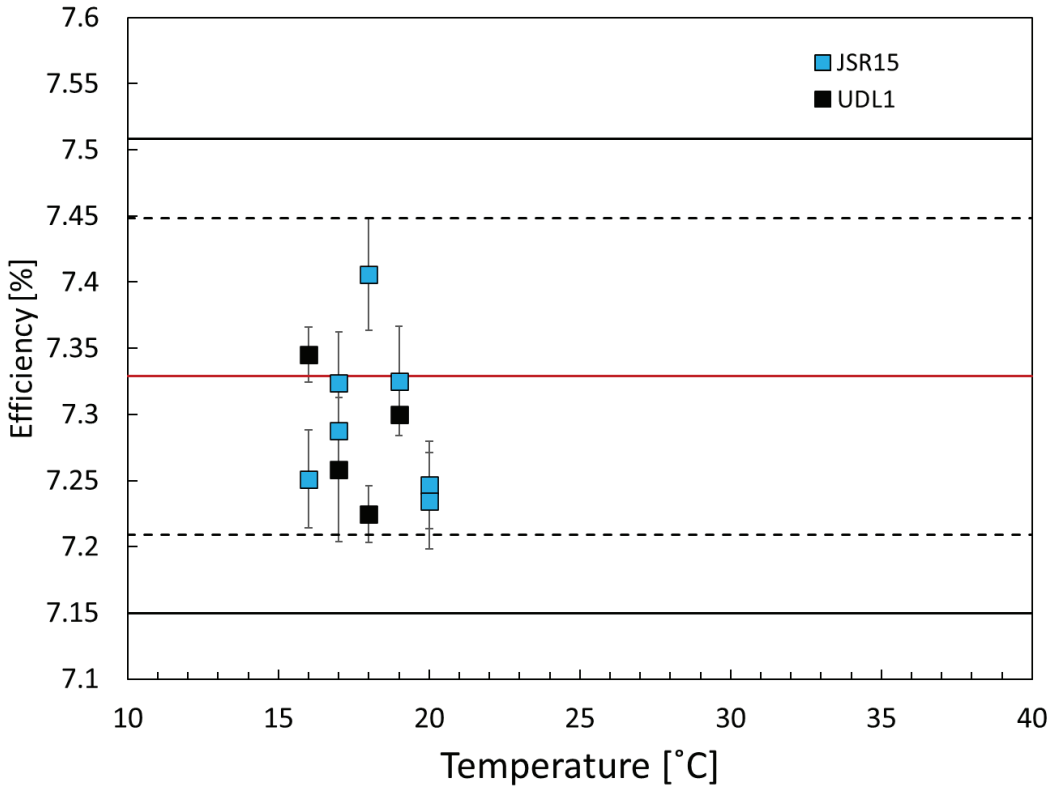

Figure 4: JFY24 Pu efficiency measurements as a function of room temperature.

3. AmLi Stability

As reported in [1], AmLi stability measurements were discontinued during JFY21 reporting period. For completeness, an overview of all the historical decay corrected AmLi stability data from 2013 to 2021 is shown in Figure 5 against the original control bounds established in [3]. Note that the decay correction on the AmLi data is with respect to 01/12/2017 when the original control bounds were established.

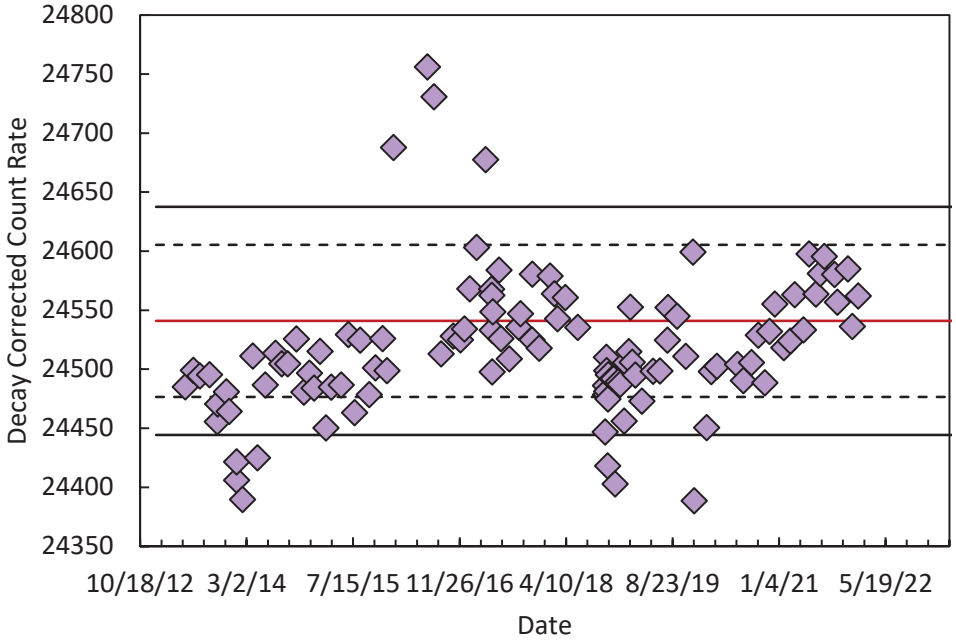

Figure 5: Historical AmLi stability measurements from 2013 to 2021.

4. Curium Stability

In October 2018 LANL started performing monthly measurements with a curium source to evaluate its feasibility as a potential replacement for the AmLi stability measurements. The decay corrected (with respect to the first measurement on 10/15/2018) results of the curium measurements performed over the JFY24 reporting period are summarized in Figure 6 and correspond to an average count rate of 983.9 ± 4.4 cps. Standard JSR15 data are compared with UDL1 measurements acquired using the multiplicity mode setting and analyzed using INCC6 software. The average count rate for the UDL1 was 983.1 ± 5.1 cps. There are four measurements on or outside of the 3 σ line. During these measurements the HPGe detectors had been removed for IPCA2 detector realignment repair. Removing these detectors changed the neutron scattering profile, resulting in lower count rates. The scattering effect is more pronounced when compared to the Plutonium because the Curium source is more like a point source. The IPCA2 measurements in March 2025, were performed during the JMOX meeting. Note that the JSR15 data (green diamonds) may be hidden behind the UDL-1 data (black squares).

An overview of all decay corrected Cm stability data from October 2018 is shown in Figure 7. Curium stability was also evaluated as a function of humidity and temperature as shown in Figure

8 and Figure 9, respectively. No dependence on humidity and room temperature has been observed over the reporting period.

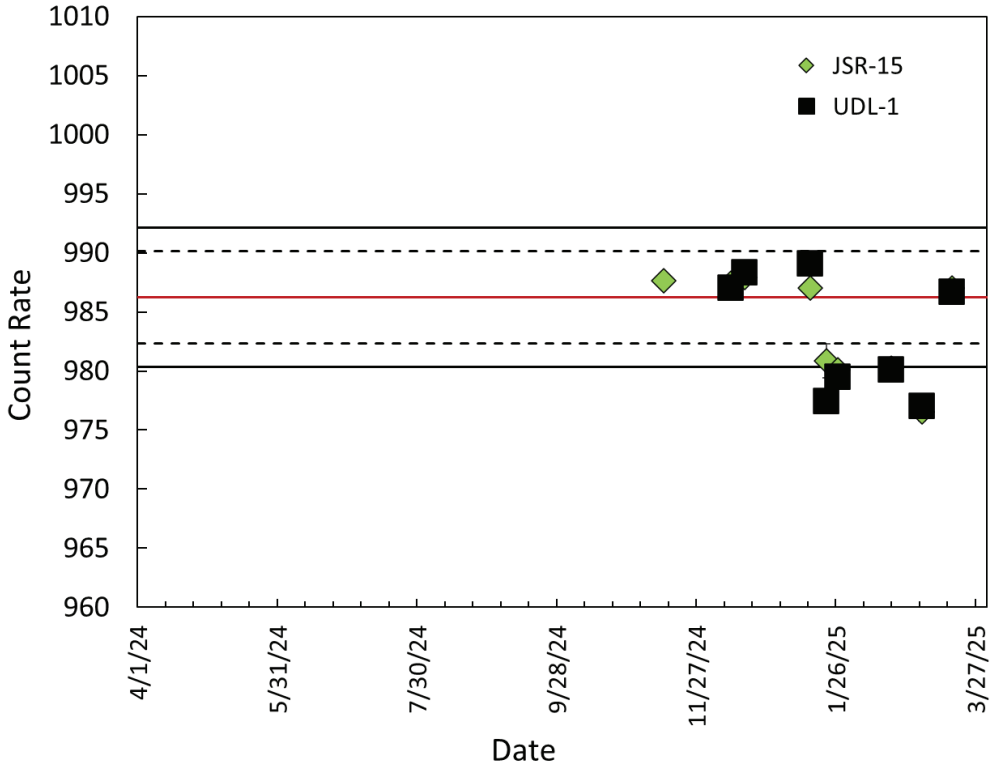

Figure 6: Curium count rates for JFY24 acquired using standard IPCA2 data acquisition system (green diamonds) and UDL1 list mode acquisition (black squares). Note that error bars are smaller than the size of the symbols.

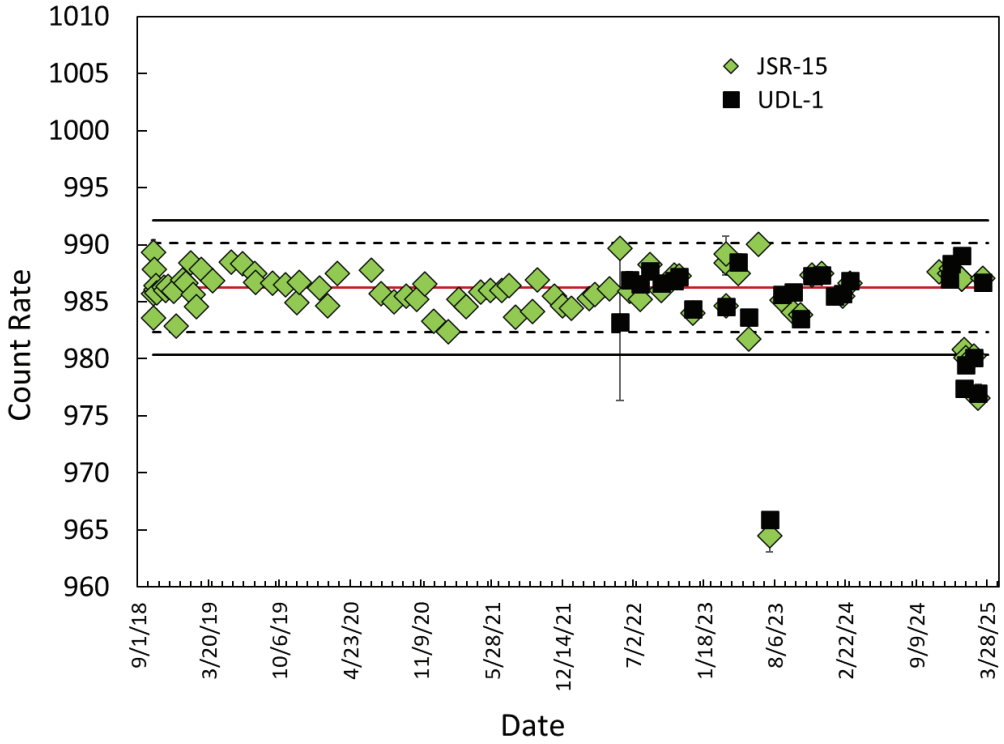

Figure 7: Curium stability measurements from October 2018 – March 2025.

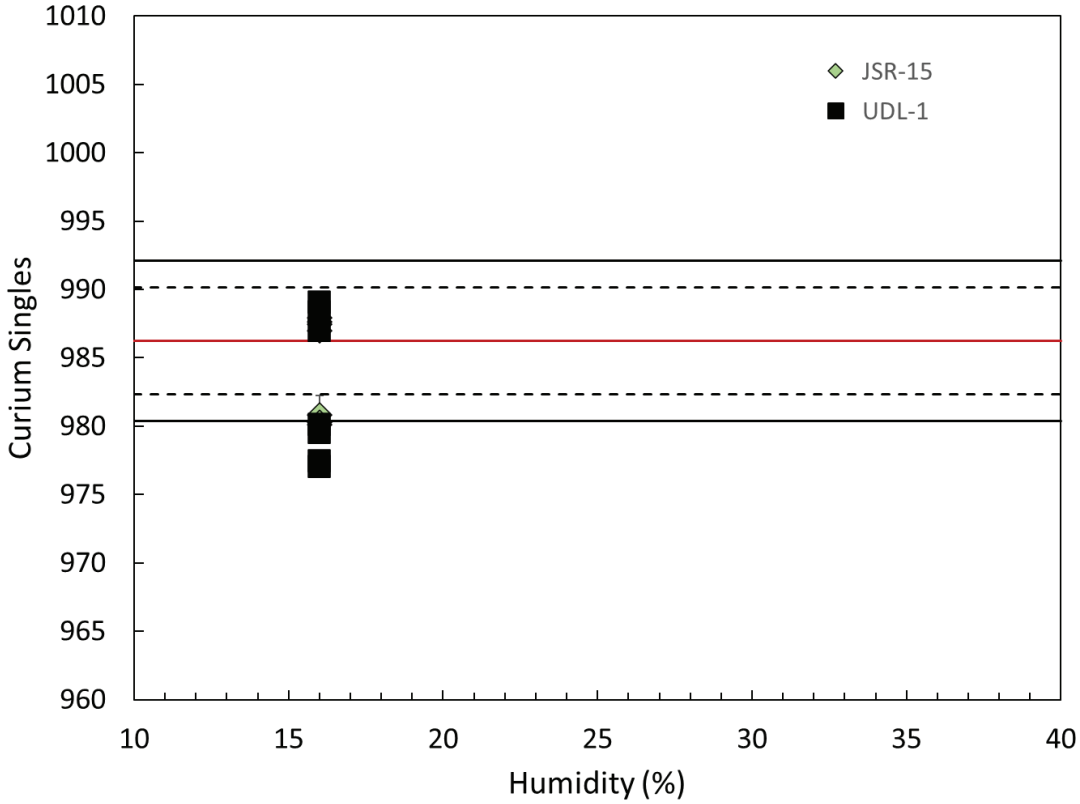

Figure 8: JFY24 Curium count rates as a function of humidity.

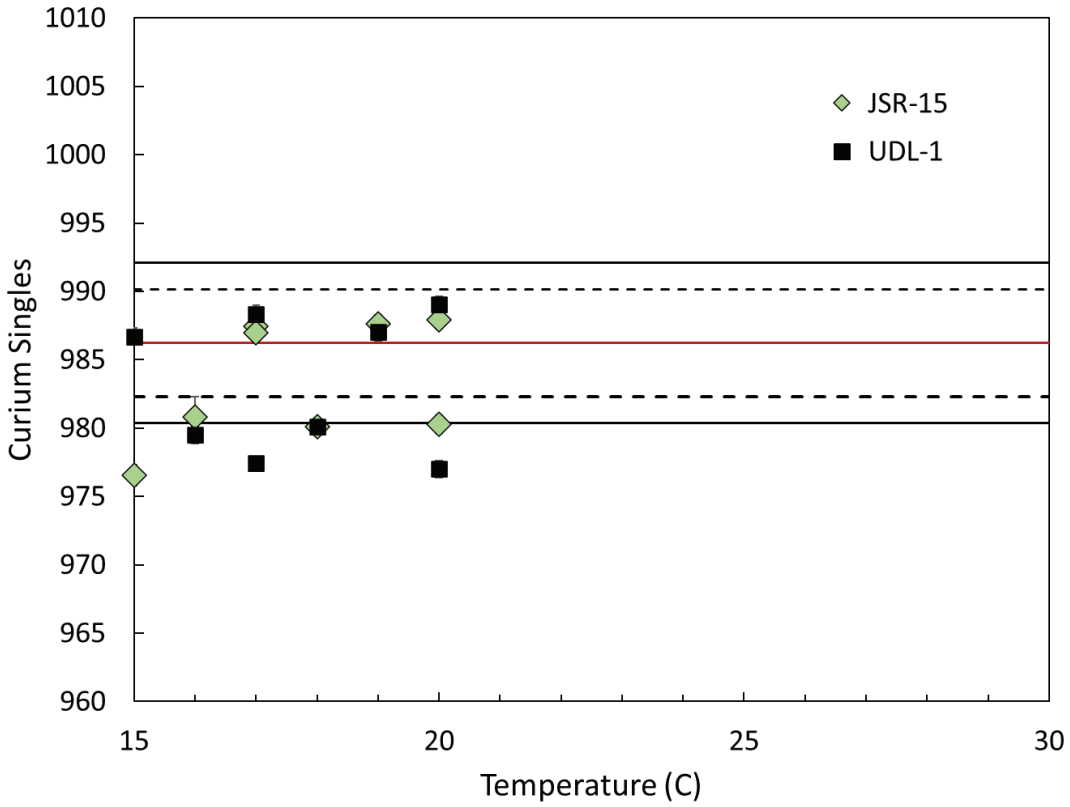

Figure 9: JFY24 Curium count rates as a function of room temperature.

5. Power Supply Repair

As noted in last year's annual report [5], we noted a degradation in the data in July 2023. Upon troubleshooting the issue, it was determined that the UPS had failed causing inadequate AC voltage to the power supply box causing it eventually to fail. In January 2025 a new power supply was installed in the Power Supply box and was connect to facility AC power. This repair fixed the degradation in data discovered during JFY23 control measurements[5]. Pictures are shown below of the internals of the power supply box and the failed power supply. The dark coloring on the circuit board indicates that the power supply failed on the AC side of the circuit confirming the cause of failure was an inadequate AC power source from the UPS. The UPS will not be replaced because IPCA2 will be shipped to Japan in early JFY25.

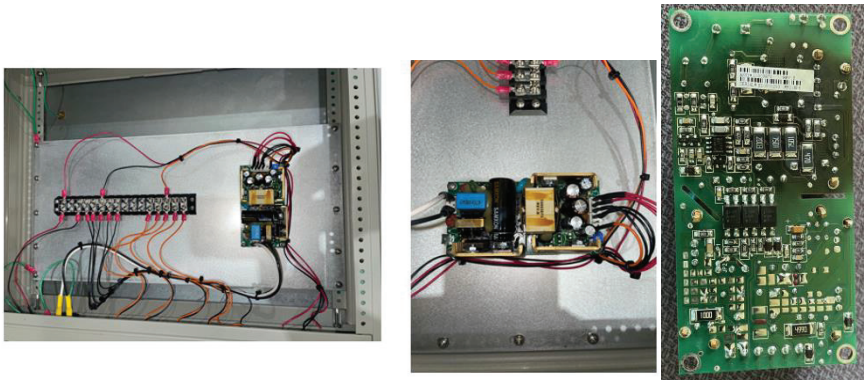

Figure 10: Power supply internal view and failed power supply

6. HPGe System Performance

No work has been performed on the HPGe detector. For transparency and continuity of knowledge the following is an excerpt from JFY22's annual report.

Based on the updated contract, HPGe control measurements were discontinued during JFY21 as the gamma spectra showed deteriorated performance on all three gamma detectors [1]. For completeness, the present status of HPGe system hardware components is shown in Figure 10.

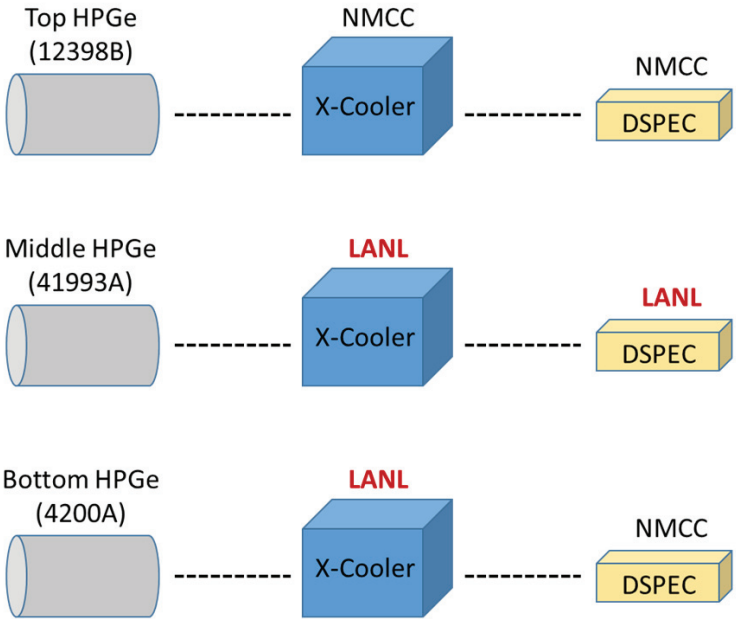

Figure 11: Configuration of IPCA2 HPGe system during JFY22.

The cause of the deterioration of the gamma resolution is likely associated with cooling interruptions due to the XCoolers failures observed throughout the years. Significant efforts were dedicated to resurrection of HPGe cooling system during 2018 and were reported in [4]. One of the potential reasons for deteriorating resolution could be buildup of surface dirt inside the detector housing, which could potentially be treated by a thermal cycling when a detector is allowed to warm up to a room temperature for sufficient amount of time (2-3 days) to allow for all the detector components to assume room temperature. This warm-up stage is then followed by normal cooling of the detector system. The thermal cycling process can help remove accumulated contamination and restore the energy resolution. Results of these trials are available in the JFY20 report [1]. During JFY22 another review of HPGe system was performed, molecular sieve and o-ring were closely inspected, cleaned and vacuum grease was reapplied as shown in Figure 11. The system is currently under further evaluation at LANL. To fully resolve the observed issues it was recommended to consider sending one of the HPGe detectors back to the manufacturer for evaluation and repair or plan for discarding the system due to planned replacement by ICS.

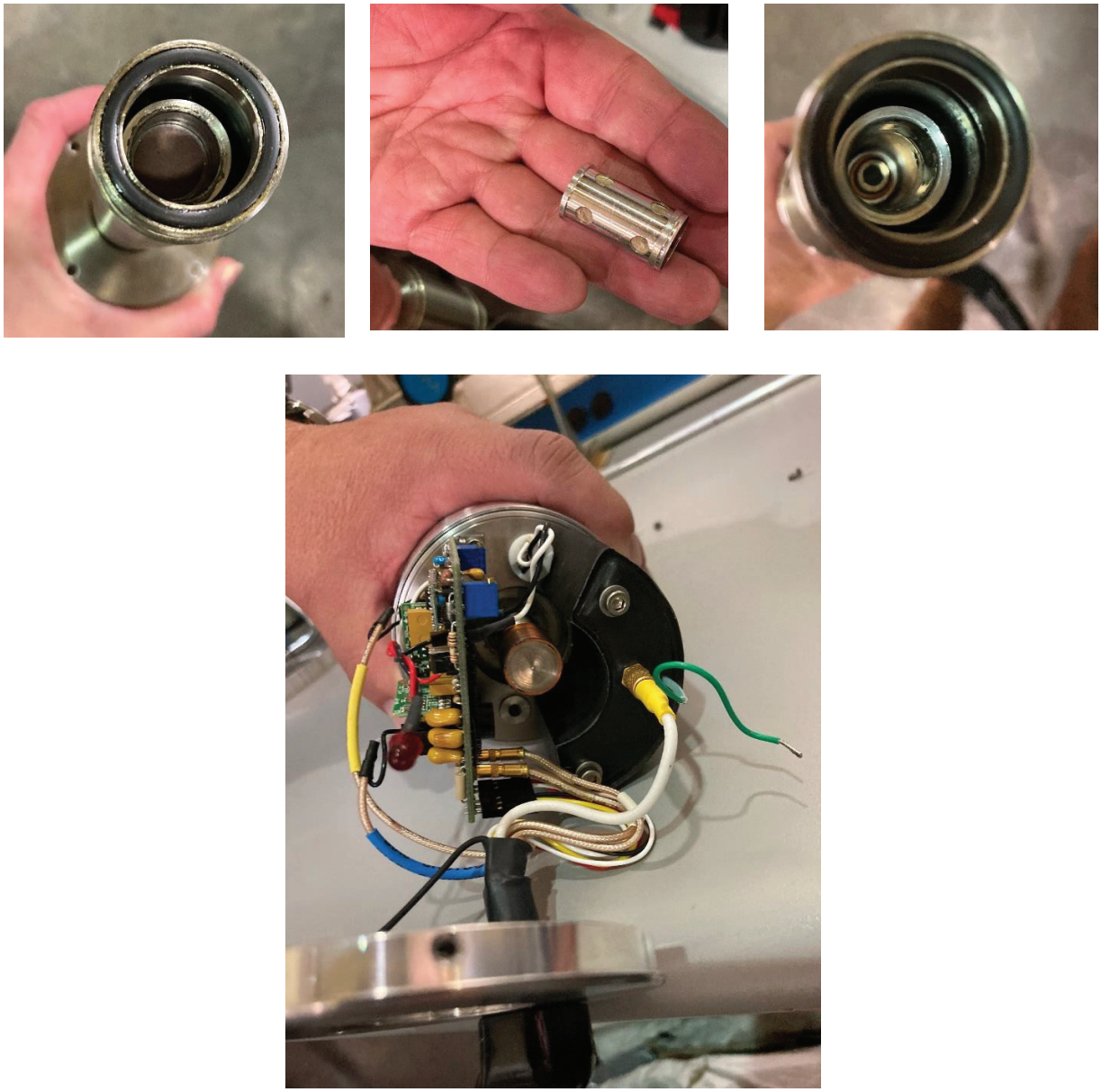

Figure 12: IPCA2 HPGe detectors review and cleaning; (top left-to-right) cooling head with molecular sieve in place, molecular sieve inspection, cooling head with molecular sieve removed; (bottom) HPGe detector junction box before cleaning.

LANL has received the IAEA ICS system for testing with IPCA2 during 2021. During the initial tests to evaluate the ICS overall status and performance, there was no measurable signal from the instrument with the gamma source located in close proximity and power and HV on. Following an appropriate cooling period, as soon as HV was applied, only low level noise was observed on the output signal coming from the detector. Following a consultation with IAEA, the ICS was sent for

repair to ORTEC. ORTEC is currently in the final stages of fabrication and testing of a replacement unit, which is planned to be installed at IPCA2 once shipped back to LANL.

7. Load Cell Data

Regular load cell measurements were performed during January 2025 to March 2025. The short time period of load cell measurements is the result of the delay in contract approval and the LANL facility crane was out of service. Each of these measurements resulted in a consistent weight of 22.69 kg.

8. Continuous Background Monitoring

As part of the contractual agreement, continuous neutron system background was acquired for IPCA2. The measurements were performed using MIC3 software and analyzed with Omniscient, LANL developed software. IPCA2 was continuously running from April 2024 to January 2025. Measurements were stopped beginning in February to allow time for detector repairs and initial preparations for shipment in JFY 25.

The continuous background results include the period between April 2024 and January 2025. Singles count rates over the reporting period are shown for each month in Figures 13 through 23 for JSR15 data. Overall, the Singles background exhibits regular variation between approximately 25 – 32 cps, which can be attributed to variation in cosmic ray background. The irregular high count rate spikes and intervals seen in Singles background correspond to various measurements that are occasionally performed in the High Bay area, where IPCA2 is located. Note that the High Bay area is used as a testing location for other LANL developed instrumentation and experiments are routinely performed throughout the year. Additional features are further detailed in the figure captions.

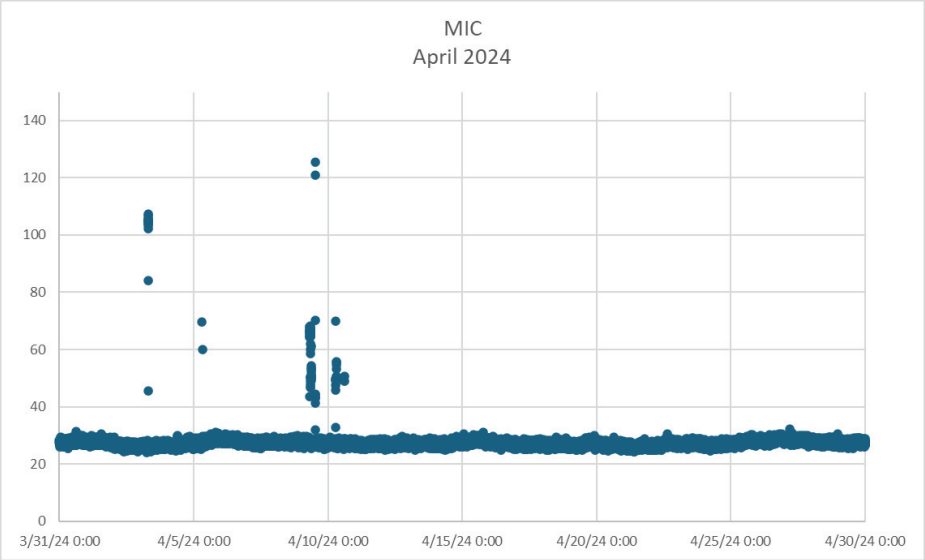

Figure 13: IPCA2 neutron background Singles during April 2024. Spikes correspond to use of sources in the IPCA2 location.

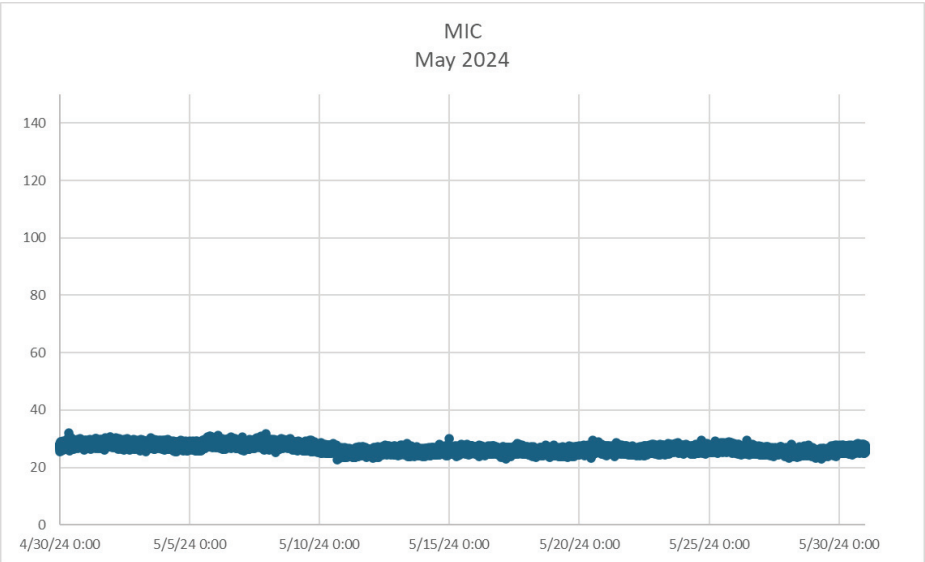

Figure 14: IPCA2 neutron background Singles during May 2024.

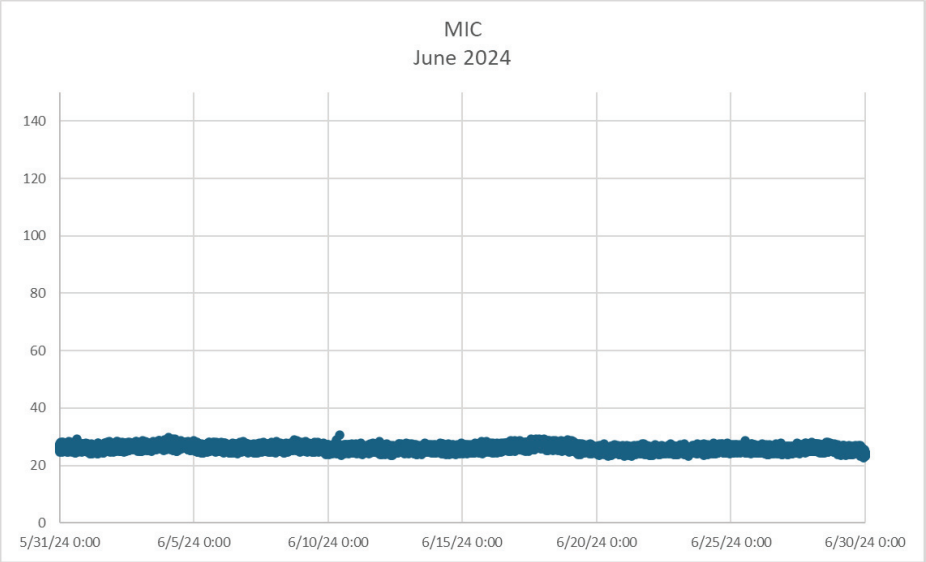

Figure 15: IPCA2 neutron background Singles during June 2024.

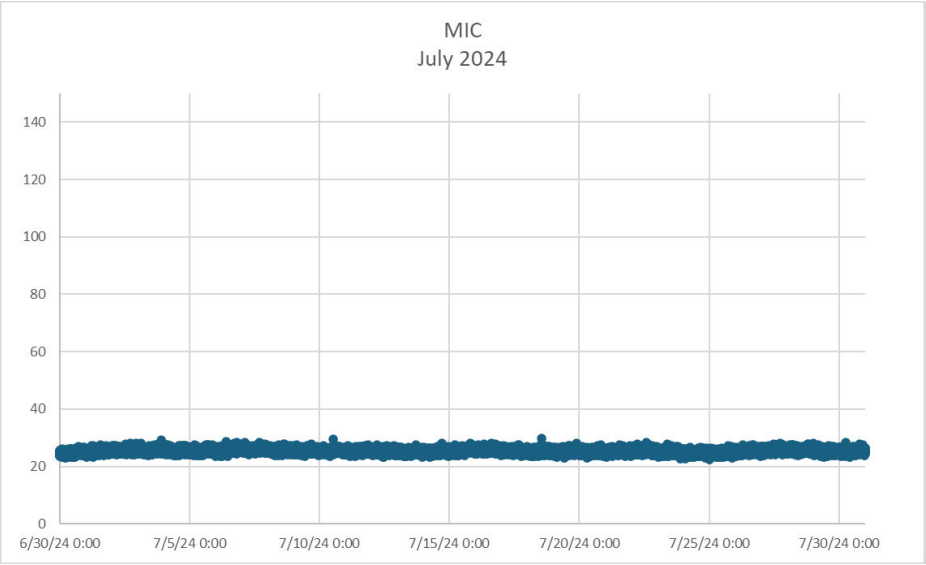

Figure 16: IPCA2 neutron background Singles during July 2024.

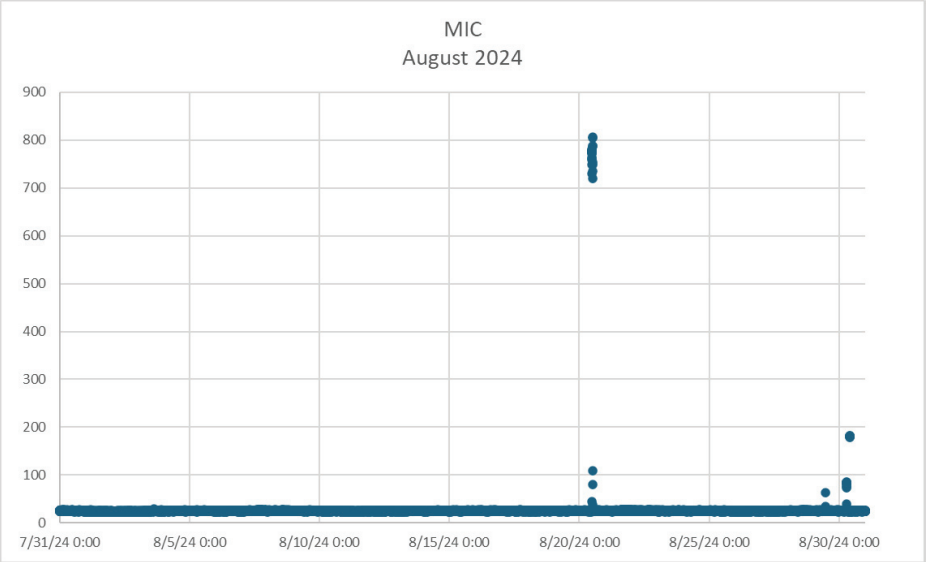

Figure 17: IPCA2 neutron background Singles during August 2024.

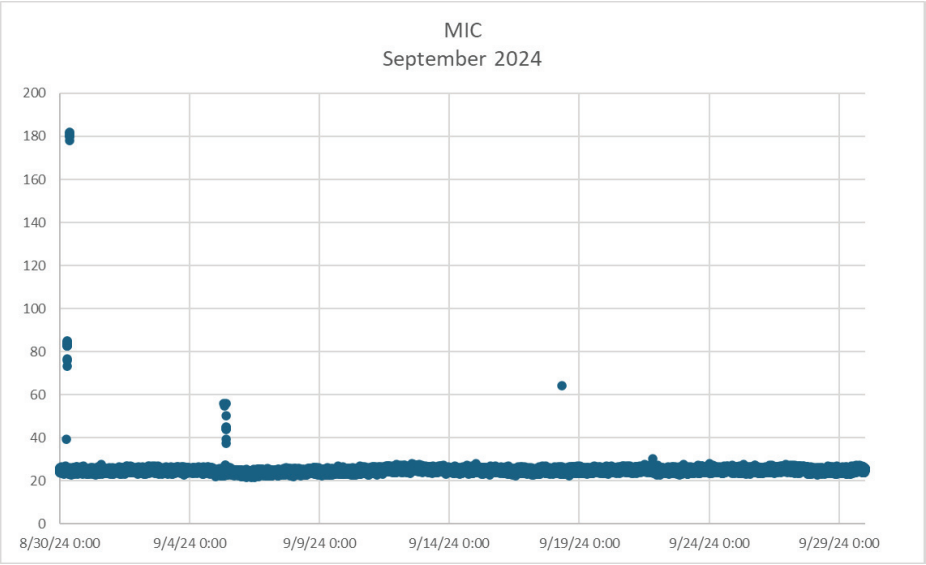

Figure 18: IPCA2 neutron background Singles during September 2024.

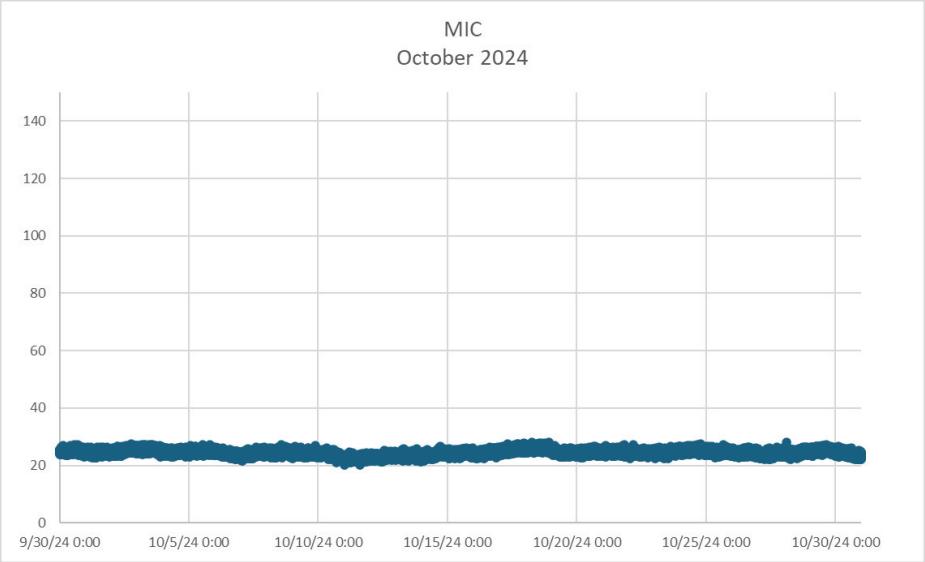

Figure 19: IPCA2 neutron background Singles during October 2024.

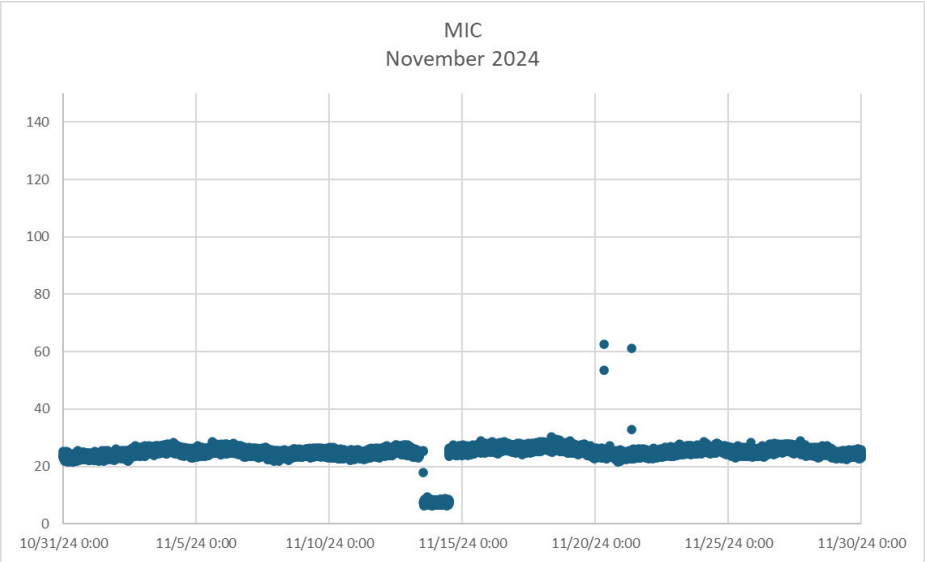

Figure 20: IPCA2 neutron background Singles during November 2024.

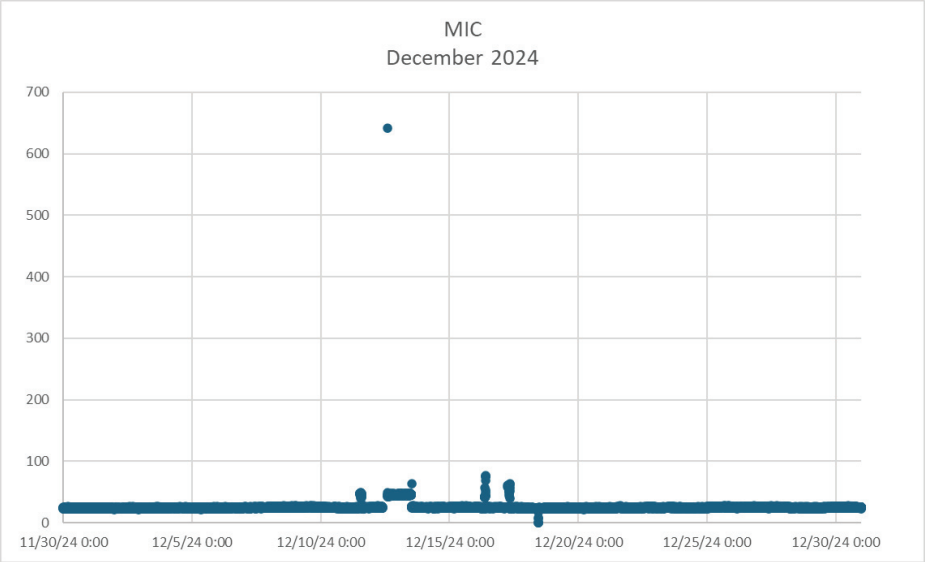

Figure 21: IPCA2 neutron background Singles during December 2024.

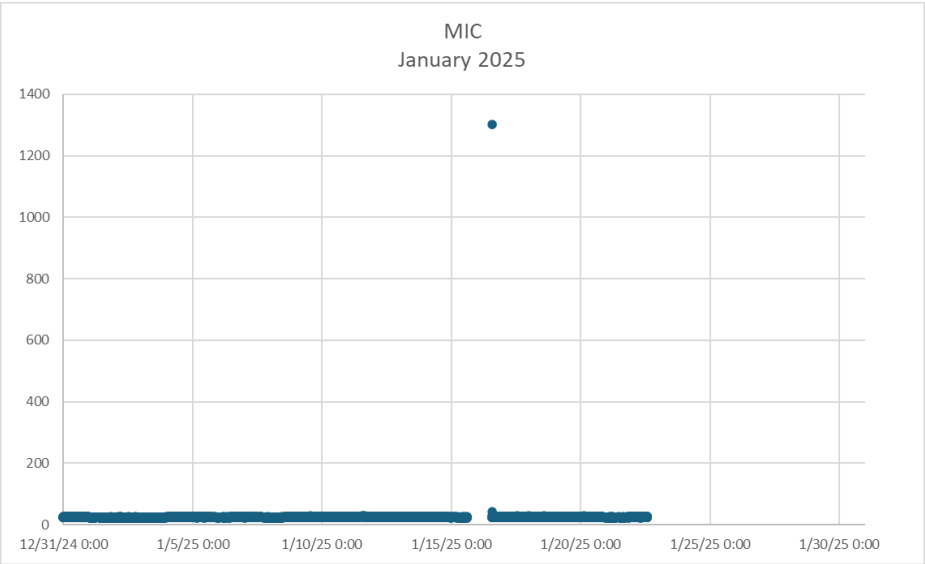

Figure 22: IPCA2 neutron background Singles during January 2024. There is a pause in data at the on about January 16for NMCC Training activities.

9. Operating Parameter Review

A series of measurement were performed to validate IPCA2's performance and provide confirmation of its operating parameters. These measurements included confirmation of optimum HV setting, efficiency, gate setting and die-away time. Table 1 shows the current operating parameters used in IPCA2 measurements.

Table 1, Current IPCA2 operating parameters.

Operating voltage [V]	1720
Predelay [µs]	3
Gate [µs]	24
Deadtime Parameters A B C Multiplicity Deadtime	 0.2065 0.0426 0 0
Efficiency (^{252}Cf) [%]	7.19

Other measurements made to validate IPCA2's performance were:

- HV plateau

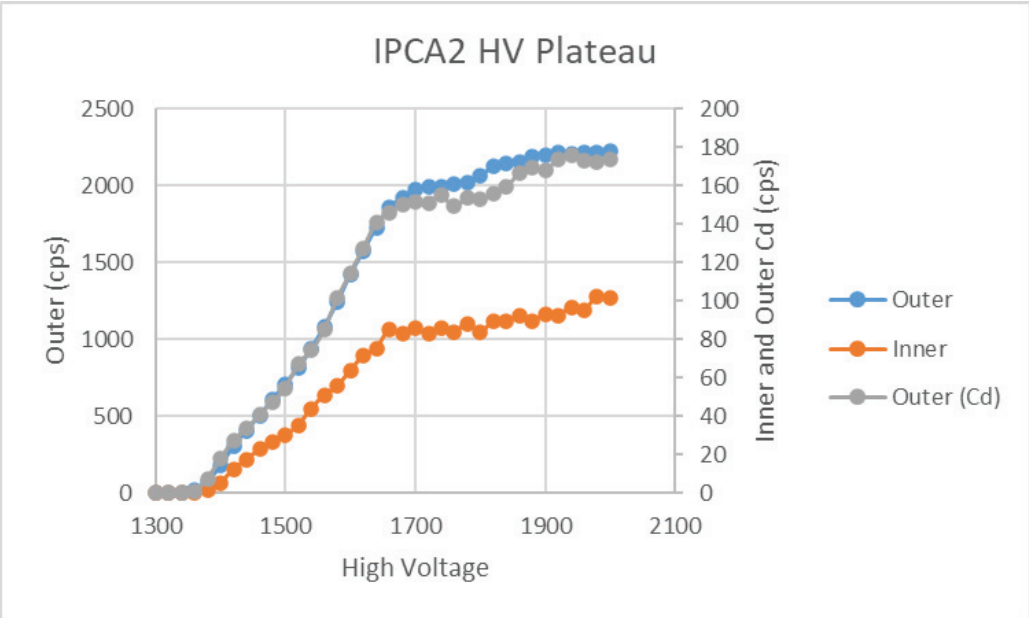

Figure 23: HV plateau for each of the signals, the Operating Voltage is confirmed to be 1720V.

- Optimum pre-delay and gate

Table 2, Die-away calculated using the gate width pair of 20 and 40 µs results in a gate of 23.0 µs, therefore the optimum gate is 24µs.

Gate (µS)	Doubles (cps)	Die-away (µS)
10	74.079	18.94
20	117.776	22.98
40	167.105	19.59
80	188.803	25.84
160	197.343	

In conclusion, the operating parameter measurements resulted in values in close agreement with the standard IPCA2 operating settings and therefore provide a valuable confirmation of IPCA2 robust and unchanged performance.

10. Summary

Table 3 provides and overview of all the control measurements performed over the reporting period (April 2024 – March 2025).

Table 3: The number of measurements taken monthly organized by type.

Month	Pu Eff	Cm	Load Cell
April 2024	NA	NA	NA
May 2024	NA	NA	NA
June 2024	NA	NA	NA
July 2024	NA	NA	NA
August 2024	NA	NA	NA
September 2024	NA	NA	NA
October 2024	NA	NA	NA
November 2024	1	1	NA
December 2024	2	2	NA
January 2025	3	3	2
February 2025	2	2	1
March 2025	2	2	2
Total	9	9	5

The results of the control measurements confirmed stability of plutonium efficiency, which stayed within 2σ, apart from the one discussed in section 2, of the overall average value of 7.33 % established from all the historical data (2013-2020). No dependence on environmental conditions (temperature, humidity) was observed. The average efficiency of the JFY24 measurements (performed between November 2024 and March 2025) corresponds to 7.28 ± 0.04%.

Curium source measurements were performed over the reporting period and showed stable performance, those measurements outside of 3σ are due to the change in the neutron scattering profile because of the removal of the HPGe detectors. The average count rate (decay corrected with respect to the first measurement on 10/15/2018) for measurements performed between November 2024 and March 2025 corresponds to 983.9 ± 4.4 cps. No dependence on environmental conditions (temperature, humidity) was observed.

According to contractual agreement, the HPGe control measurements were discontinued starting in JFY21 as the HPGe gamma spectra showed deteriorated performance on all three gamma detectors [1].

UDL1 performance was evaluated as part of IPCA2 set-up and acquired data demonstrated statistical agreement between UDL1 data acquisition (both list mode as well as dataz) with JRS15/INCC/MIC system for Pu, ^{244}Cm. In summary, the neutron system performance exhibits expected trends and no other measurements will be performed, as we will focus on preparing the system for shipment to Rokkasho in JFY 25.

11. References

[1] D. Henzlova, J. Archuleta, A. Favalli, C.D. Rael, M.T. Swinhoe, “Annual IPCA2 Performance Report for JFY20”, Los Alamos National Laboratory Technical Report, LA-UR-21-22978 (2021).

[2] D. Henzlova, A. Sagadevan, “UDL1 Performance Test”, Los Alamos National Laboratory Technical Report, TBD (2023).

[3] M.T. Andrews, M.T. Swinhoe, J. Archuleta, D. Henzlova, A. Favalli, J.B. Marlow, “IPCA 2 Data Analysis and Updated Control Charts”, Los Alamos National Laboratory Technical Report, LA-CP-20366 (2017).

[4] D. Henzlova, J. Archuleta, M.T. Andrews, A. Favalli, J.B. Marlow, C.D. Rael, M.T. Swinhoe, “Annual IPCA2 Performance Report for JFY18”, Los Alamos National Laboratory Technical Report, LA-UR-19-24828 (2019).

[5] C.D. Rael, D. Henzlova, A. Sagadevan, D. Leyba, M.T. Swinhoe, “Annual IPCA2 Performance Report for JFY23”, Los Alamos National Laboratory Technical Report, LA-UR-24-22781 (2024).